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ABSTRACT

The university as an open system is addressed in 13 papers and 12 abstracts of papers from the 1983 forum of the European Association for Institutional Research. Topics are as follows: program review, analysis of faculty outcomes and characteristics, manpower planning in Dutch universities, adult education in the United Kingdom, outside funding, and international institutional comparison. Titles and authors include the following: "A Political/Democratic Model of the University as an Open System" (Donald E. Walker); "Institutional Research as a Profession: A Review of the 1979-83 Years" (F. Craig Johnson); "Program Review at Michigan State University during the Fiscal Exigency of FY 1980-81: A Case Study" (William A. Simpson); "Relations between Age, Mobility and Productivity of Academic Researchers" (Arie van Heeringen); "Some Examples of Differentiation within the Dutch Academic Staff between 1959 and 1973" (Peter G. M. de Rooij); "Adult Education: An Overview and Some Aspects of Research at Sheffield City Polytechnic" (Douglas Thacker); and "Private Support for Higher Education" (Ben J. Tuchi, Susan Shamin, Teresa M. Lewis); and "The Urban, State-Supported University in the United States and The Netherlands: A Comparative Analysis" (Frank G. Dijkman, John A. Muffo). (SW)

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Fifth European forum of the association for institutional research

The University as an open system

Proceedings

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August 17|19|1983 Maastricht, The Netherlands

THE UNIVERSITY AS AN OPEN SYSTEM

CHARLES H. BELANGER, EDITOR

5th ANNUAL FORUM
EUROPEAN ASSOCIATION FOR INSTITUTIONAL RESEARCH
UNIVERSITY OF LIMBURG
MAASTRICHT, THE NETHERLANDS
AUGUST 1983

5th ANNUAL FORUM
EUROPEAN ASSOCIATION FOR INSTITUTIONAL RESEARCH
UNIVERSITY OF LIMBURG
MAASTRICHT, THE NETHERLANDS
AUGUST 17-19, 1983

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PREFACE AND ACKNOWLEDGEMENTS

The success of every conference is directly attributable to the coordinated work of a number of people. The 5th European AIR Forum was no exception. Back in August 1982, Hans Acherman had made the initial moral commitment to hold the Forum in The Netherlands. From that point on, the Dutch Ministry of Education and Science along with the University of Limburg, the youngest but certainly not the least dynamic Dutch university, accepted to cooperate fully. Their support was much appreciated by all.

Our most sincere thanks go to the Program Chair, Peter de Rooij, his Program Committee members, and his secretariat staff. Their enthusiasm and readiness to serve resulted in a quality conference marked by the well-known Dutch ingenuity and efficiency.

On behalf of all participants, I express my deepest gratitude to all those who were associated with the organization of the Forum. I personally would like to thank all participants and particularly those who made presentations of various kinds. In fact, there were so many quality papers that the Contributed Papers Selection Committee had a hard task to sort out the most deserving on the basis of our fallible criteria: European relevance, significance of contribution, overall content quality, and technical requirements.

Finally, a special note of indebtedness is given to Ms. Huguette Albert who typed these Proceedings and to Ms. Laura Winer who assisted with the editorial work and proofreading.

Charles H. Bélanger

ANNUAL FORA ON INSTITUTIONAL RESEARCH

1979 - **Institutional Research in North America and Europe**, Paris, France

1980 - **From Institutional Evaluation to Catastrophe Theory**, London, England

1981 - **The Pyramid of Decision and Other Approaches**, Louvain-la-Neuve, Belgium

1982 - **The Universities in a Changing World - Adaptation or Guidance**, Uppsala, Sweden

1983 - **The University as an Open System**, Maastricht, The Netherlands

1984 - **Beyond Retrenchment: Planning for Quality and Efficiency**, Brussells, Belgium, August 21-24

1985 - Danemark

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OPENING ADDRESS TO THE FIFTH EUROPEAN AIR FORUM

Roeland J. in 't Veld
Director General
Ministry of Education and Science of the Netherlands

First of all I would like to reveal our joy and gratitude that the Fifth European Forum of the Association for Institutional Research takes place in our youngest university which is aiming at distinction and excellence on one hand and open relationships with society on the other.

In your program, you will see that the theme "the university as an open system" to the opinion of the organising committee refers firstly to the interaction of the university with the environment. The key-words are here, of course, "interaction" and "environment". In this day and age universities cannot any longer operate "in themselves". The extreme ivory tower image will hopefully be a thing of the past very shortly, simply because it is a luxury society cannot or at least does not want to afford any longer.

I cannot very well ignore the fact, that, by the nature of the speaker being the civil servant responsible for the effective administration of post-secondary education, university affairs and state research facilities, you will suspect that I represent that certain view often associated with "big brother". After all 1984 is very near.

The distasteful characteristics of this concept of government involvement are generally condemned in this country but still at the best of times and before spending a dime, the government requires ten dollars worth of information. Add to this the fact that the spending of public funds has currently a very low upperboundary and it should be clear to all of us that just over the next few years the government will need to know a lot more about the system.

As a matter of fact, even within the "council of ministers", and that is our highest management team, the rivalry and competition for even a proportional share of the ever decreasing "pot of money" are fierce. So it is inevitable that the minister of education and science will feel the need to be well informed so as to support and translate the heavy political choices the government has to make.

In the political debate now the impact of higher education and scientific research on society at large is a key issue.

One of the benefits of the no-nonsense-mentality now present in many European governments may be that taboos are abolished and that allegations have to be proved again.

In the economics of education the contribution of education to economic growth and the beneficial external effects of higher education played an important part.

Now that economic growth has disappeared these concepts have lost convincing power.

The Netherlands are longing to fulfil conditions as a consequence of which new industrial activity will be developing.

Therefore the questions "how adequately is skilled manpower developed through higher education" and "does research produce a type of new knowledge which creates a perspective for future industrial activity?" are cogently put now.

If the foregoing gave you the impression that our university system is at the mercy of ad hoc decisions to alleviate acute financial stress, I must admit that a large part of our attention is being focussed on financial matters. However at the basis of all smoothly executed ad hoc plans, there are of course, well thought out, long term policy developments which guard the quality of higher education. It is in these long term plans that the effects of a fast changing society on the educational system, are worked out. These effects put a heavy strain on students and staff as well as services. Some of these demands are readily identified. So is there the emergence of a new category of student, one whose basic university education is completed but who will be required to continually update his knowledge, which again will become rapidly obsolete, during his professional life. It was on the basis of these expected societal changes, rather than economy, that in the Dutch university system the length of doctoral programs including professional schools is shortened from about 6 years to 4, albeit on top of a very selective secondary school system. These "short" programs will be much better suited to accommodate rapid change and furthermore allow the graduates an entry into the labour market at an earlier age. It is expected that now, with the new doctoral program and the introduction of a post-graduate program for advanced professional studies and post-academic courses to update stale knowledge, society's demands can be more rapidly and flexibly met. Have we already reached the final point of this development? Furthermore, Government's actions to promote throughflow among academic staff have merely been accelerated by the recent cutbacks. The problem is that after the massive hiring of university teachers in the late sixties and early seventies to offset the increased student influx, there now is a stagnant pattern, which is of a continued concern to the Government. This problem is further aggravated as all teaching and research staff have tenure, except the most junior assistants. These factors made the occurrence of a massive "grey-bulk" inevitable.

A complete rethinking of the place and position of "University teachers" is taking place at the moment. With the introduction of an "assistant in research-training" program the government hopes to rally, over the next four years, some 4000 young and very talented graduate fellows, from amongst whom future university teachers will be drawn. I am convinced that this program, linked with a scheme of early retirement inducements, will enable the Government to import a healthy degree of mobility into the system.

To reach a budget cut of a quarter of a billion guilders Dutch universities and government, in a pattern of cooperation which certainly will be subject to institutional research, have prepared decisions which can be named task sharing and concentration. All this within a university system of 13 institutions had to be supported of course by a massive interaction of information exchanges both ways through the system.

It is no wonder then that administrators at all levels within the university system and Government hope that upheavals of this kind and magnitude will be a one-time phenomenon or at worst be limited to once a decade.

It is however also a truism among policymakers that real planning will come down to brass tacks if the money supply is short. So in spite of the financial distress of the system as a whole there should be some rejoicing among those gathered here, for their skills will be in great demand.

One can furthermore ask the question if, besides giving hope to institutional researchers, it could also be that the current predicament of the university system provides us with an excellent opportunity for a closer examination of the function and functioning of our institutions.

In respect to all the foregoing I am sure that you will recall that in the recent past there have been some international conferences held with the very same theme.

I will mention a few, like the OECD-conference of 1981 regarding "policies for higher education in the eighties" with an emphasis on the changing relationship between higher education and working life.

One of the relevant issues discussed there was, and I quote:

> In the final instance it could be argued that the main dilemna - facing the universities - from an economic or employment perspective, is not one of expansion versus restriction but one of qualitative changes, which should be introduced within higher education, in terms of the content and structure of studies, methods of teaching and openness to the outside world, so as to contribute both to the technological development and structural adaptation in the economics of OECD countries. This, of course, is a fundamental issue which goes well beyond employment considerations as such and on which the dynamic development of higher education will ultimately depend.

It is obvious that here lies a role for institutional research, for the relationship between "government" and "institutions" does not revolve purely around money. It is just the necessity to evaluate, within the limited possibilities left to us, alternative solutions on the basis of research, that will provide the institutional research community with her greatest challenge yet. So the relationship between policy and institutional research is, from a government point of view, a happy and enduring one indeed, because it enables policymakers to set out confidently a course by means of general policy outlines, which left to itself often leads one up the garden path when inevitably the "unforseen" happens to foul-up the implementation. But co-operation with institutional researchers enables the policy-analyst to work out, on the basis of the proposed policy, a quick approximation of one possible course of actual implementation to check its validity. So, the institutions themselves can now fill in their own particular solution within the framework of the issued broad policy outlines. It should be clear that this approximation should not be used in turn to generate more detailed rules and regulations, but on the contrary should assure the government that no further regulations are necessary later on, because they know that at least one workable solution of the problem is possible.

Secondly I recall for you the CERI conference held in 1980 about "the university and the community" in which several strategies for university-community relations were discussed.

A fitting description of what, then in 1980, was seen as a reality still holds today and I quote:

> It is striking to see how today the bulk of efforts to improve university-community relations concern employment-training adjustments, vocational training and closer contacts with industry and the various production sectors. This trend entails an apparent return to national planning, with reduced transfers to deprived areas, incentives for manpower mobility and greater emphasis on employment problems. However, the attempts of Member countries to adapt the educational system to society's demands and needs are no longer being made only at the level of society as a whole. There is a growing desire to gear higher education institutions more closely to their surrounding local and regional communities, establish stronger links, co-ordinate policies and respond to a constantly growing range of specific requirements and objectives.

This current emphasis on the "Employability" of graduates has led, over the past decade, to a gradual restriction of those characteristics in our Dutch university system which were traceable to the Franco-German tradition of "allowing unbounded development of scholarly potential" in favour of emphasising the main trait of the Anglo-Saxon conception of "the forming of the maximally trained mind". Over a period of hundreds of years though, it was these two conceptions which led to the establishment of the complementary position of our current global university systems. It is rather curious that now, at first glance simply on the basis of economics, the gap between them is narrowing. We may well, in the end, come to a university system which enables us to utilize the best of both, viz. the high standards of intellectual pursuits of the one and the increased manageability of academic as well as financial resources inherent to the other.

Thirdly I would draw your attention to the annual European conference of our esteemed body of "Rectores Magnifici and vice-chancellors" which provides us with knowledgeable guidance so as to assure that identification with the local community will never become equated with "small-town-parochialism" and that the interplay of university and community will always be placed in a larger context to assure a continuation of widening perspectives and so avoid possible complacency or intellectual narrowness.

In spite, however, of all the wisdom generated at international conferences it remains true that the turbulence in which we now try to sustain the university system was created in the wake of a general economic decline which came totally unpredicted if not unexpected. Measures to take then had to be of an ad hoc nature which taxed to the limit the resourcefulness and perseverance of those charged with administering the sudden cutbacks. Therefore it could be said that administrators and policymakers don't just need long-term predictions of future trends from institutional research but they also need to further their understanding of the functioning of the system, that is "to open-up the system"; in a real sense to make it transparent. In this light it may not hurt to recall, as a possible benefit to administrators present here, the definition of institutional research as used in the International Encyclopedia of Higher Education.

> Institutional research is the study and analysis of the operations, environments, and processes of institutions of higher education. *Institutional research objectives include improvement of institutional selfunderstanding*; identification of the characteristics and expectations of constituent groups; clarification of the uses of the human, financial and physical resources; evaluation of the teaching-learning process; policy analysis supportive of effective planning; and assessment of the outcomes of the varied activities of higher education.

Certainly not the least important is the sentence "institutional research objectives include improvement of institutional selfunderstanding". Because it is "understanding of the institution" which enables the administrator to maintain and develop an effective and efficient span of control of the academic as well as the financial resources of the system. We can say that the phrase "the university as an open system" should not just mean open towards the community but also open to the decisionmaker i.e. the universities' top executive and government's policymakers. This is, certainly at the moment, of some importance, because it is to them that in the end the bedazzled researcher, student or teacher will turn, if funds are cut-off and jobs eliminated. But to evaluate the possible solutions to a problem it is imperative that the policymaker has a complete grasp of the alternatives from which he has to choose the ultimate course of action.

At this point it may be nice to remember what Dr. Robert Bandeen, one time member of AIR and past vice-president of Canadian National, put so well when he said "a manager, given the choice, would rather live with a problem he cannot tolerate, than accept a solution he cannot understand".

And as we may well view the university as an enterprise, if not yet profit-oriented corporation, then the institutional researcher should look at the best way of making sure he is being fully and thoroughly understood. Because that's the foremost condition to make institutional research work at all levels of the institutions, so the institution reaches the ultimate goal of implementation. For it is axiomatic that *primo* the universities' inner workings should be transparent to its executive before, *secundo*, the role of the university as an open system towards the community can effectively become reality.

Let's turn our minds to some of the factors that make institutional research work. The following points may serve to illustrate what I mean. It is often said that institutional research people are unable to extricate themselves from jargon charged communications fog and are too inclined, when finally handing down a well-founded but very lengthy report to adopt an attitude of "better-late-than-never" when in fact "late" has meant "never". I believe that communication should take the form of memos rather than reports or position papers, and it should be brief, to the point and written without jargon. Furthermore, the overall understanding and grasp of the intricacies of an organisation we are after will not be enhanced by building one overall blue-print model. The problem can be much better addressed by developing, in a gradual way, small integrated models which relate to one specific aspect of the overall problem. For instance, one can look at the model which provides a forecast of first year intake. This answer feeds a studentflow model which provides a projection of enrollments. These enrollment projections feed a budget model and so on. By separating the problem into components we allow senior management to make decisions in bite-size pieces and to my experience, they are quite prepared to do this. Also, to avoid the possibility that research results are shelved through lack of attention, it is often very handy to organize a small seminar with top management, so as to inform them by means of a direct discussion of the alternatives. The herefore mentioned route will in any case minimize the "communication problem". Finally the timing problem should be addressed by supplying the goods on time. This may sound overly simple and even a bit foolish but please consider that the phrase "something is better than nothing" is far more acceptable to managment than "better late than never" because as I stressed before, in this game "late" means "never". Finally, experience dictates that it is very good for top management's peace of mind if the institutional researchers understand that theirs is only one input to the solution of the problem. There are many other inputs that are to be considered by management. And if solutions implemented are different from those recommended on basis of institutional research it does not mean that the analysis was wrong or ignored. For even then it is comforting to know that the means of institutional research allowed us to gain a deeper insight into our university system; it is together with common sense however that it should enable us to do it with very little trauma to the institutions. I would like to take this opportunity now to make known the feelings I have about some of the specific program items, without trying to steer the conference, of course.

- About canceling of academic programs, one may well ask, what exactly is the role of the Government in this respect. One may well hold to the view that there is no such role for the government. I think that if there is a role at all it should be solely supportive and at most directional. In Holland the governement is responsible for the financing of the system.

  As such there is the responsability that each and everyone of the institutions gets, within the limits of a budget, on political motives established, its just and fair share. But that is only one side of the coin. I strongly believe that a government should also provide conditions under which a maximum return on the invested capital should be guaranteed.

  Cancellation of obsolete programs and consolidation of programs which are spread too thin through the system to warrant a healthy influx of students, should be possible, if only to redistribute part of the money saved to more worthy courses within academia. It is self-evident that this redistribution should of course be based on criteria of quality and be in acordance with national policy. We have gained a lot of experience during the preparation of our task division decisions; there is still a debate going on whether or not it is morally acceptable that university autonomy covers this field too or, put otherwise, whether universities themselves should prepare the closing down of some of their own departments.

- Over outside funding, if one lays one's ear to listen, one can hear growing dissatisfaction with the level of government funding. On the one hand there are arguments to support the point of view that education and research are just a small part of the total of society's endeavours and as such they should share equally in the cutbacks. On the other hand equally valid arguments are brought forward that educating our talented young and engaging in research is a necessity brought about by our modern and demanding times. It is when the government can't provide as much money as before that thoughts of "outside" funding come about. Novelties such as "scienceparks" and "transferpoints" are stimulated by government and institutions alike. Schemes are developed to let students pay a more "fair" share of the price tag. In countries such as ours, with a large collective sector it usually meant a redirection of moneystreams from one department to another. I can say that our government at the moment entertains the thought of some form of sharing for professional postgraduate courses, but I believe that it will be very difficult to stop the momentum towards equal sharing. It would be fascinating if institutional research during this forum would try to cover the question of the frontiers of the possibilities of outside funding. It is clear that a potential danger of outside funding is the increasing dependence on outside institutions and as the function of a university as society's main institutionalised critic demands independence, the frontiers mentioned above become visible.

- As to the problem of adult education one can say that it can be separated in at least two categories: one for those who never had a crack at it before and now at a later station in life feel the need, and another more specific one for updating stale professional or general knowledge for those who already went through the system at an earlier age. In spite of the fact that the first category occasionally suffers from governmental patronizing attitude towards those of us who are allegedly irregular, do all agree that equal opportunity should be provided by the government for those who bloom late in life or who simply had other things to take care of first.

  The second group has needs which are not simply the sole responsibility of the government as it is society which demands a continual update or refreshing of skills. A sharing of costs on the basis of expected future gains should be seriously considered.

- I would also like to share with you my thoughts about manpower policy and planning of universities. When I spoke earlier of the narrowing gap between the Franco-German vs. the Anglo-Saxon conception of what a university should be, I also indicated that the Dutch system was gradually moving towards the idea of providing the means "to train the mind" rather than encouraging "unbound and unhurried maturing of intellect". This very gradual process is, as I also mentioned, speeded-up in the wake of a general economic recession. The connection between what society may think it needs and what the system "thus" should "produce", however, is still rather more a "wished for" than a "real" one.

A lot more research will have to be performed (here again lies a good number of tasks for institutional researchers) before the government can allow itself to be drawn into proposals or suggestions.

- As for international cooperation, the global advancement of specifically the natural sciences has led, in the recent past, to an increasing number of international magazines and conferences. Also the judging by one's peers in the form of visiting committees, etc. has already for some time had international overtones. In short, science depends largely on international cooperation and as a rule in academia, teaching and education follow closely the goings-on in research. Now, also, as the different university systems grow more closely to resemble each other in structure and aim, the need for international cooperation between administrators and institutional research becomes apparent. The timely exchange of the results of studies done into the working of universities is of great value to us all; besides, there really is no need to invent the wheel over and over again.

In general I would like to say that the program committee is to be complimented for its choice of the subjects to be discussed over the next couple of days. I am glad to see that they bear great relevance to our current Dutch situation without being solely dedicated to it. So I will already say that I look forward to the results of your discussions.

In drawing my speech to a close I would like to stress the point that institutional research should not just be a collection of research tools and studies but rather a state of mind. You will allow me one last illustration, I am sure, to make my point, because even though it is an oldy and a very necessary one for civil servants too, it illuminates my meaning with some clarity. It is said that the birth of Operational Research happened in the beginning of World War II. The Battle of Britain was fought by the RAF at the loss of numerous Spitfires. All possible measures were taken to prevent these losses, so as soon as a plane returned, its bullet-riddled fuselage was reinforced with armoured plate at the very same spot. But all this was to no avail, as these preventive measures did not decrease the ever growing number of planes shot down. At the end of their rope, the RAF establishment called in some keen minds to look at the problem of increasing plane losses. After having looked at it for a while they came up with a solution as simple as it was staggering to the technicians. They instructed the mechanics to attach armoured shields at those places which had no bullet holes at all. The reasoning that led to the solution was clear, simple and shook rusty minds. The planes that could be repaired had come back! And the planes that did not return were obviously hit in other places than those routinely repaired according to the "book".

So my last advice would be do not allow yourself to be too clever in the old rut, look at each problem from afresh, with a free and unbiased eye, then a solution will ultimately present itself.

A POLITICAL/DEMOCRATIC MODEL OF THE UNIVERSITY AS AN OPEN SYSTEM

Donald E. Walker
President
Southeastern Massachusetts University

All organizations, at least those that must justify themselves to supporters and constituencies, claim to be unique. Universities are no exception to this rule. To a degree, however, there is validity for claims of uniqueness by universities. To begin with, they are more durable than most institutions. Clark Kerr (1982), in his postscript to the reissue of his classic book The Uses of the University, observes "Eighty-five institutions in the Western world established by 1500 still exist in recognizable forms, with similar functions and with unbroken histories, including the Catholic Church, the parliaments of the Isle of Man, of Iceland, and of Great Britain, several Swiss Cantons, and seventy universities. Kings that rule, feudal Lords with Vassals, and guilds with monopolies all are gone."

The uniqueness of campuses may be explored from other perspectives. Cohen and March see them functioning as organized anarchies but not operating without regularities or without reasons. They have been compared to medieval guilds. On occasion they have been thought of as a kind of extended family, or even as church-like organizations. Certainly they are complicated and complex. Complicated organizations are difficult to study. This is particularly true if we have a "picture" in our minds of how they "should" operate. Obviously, the pictures in our minds often determine what we will see and what we will choose to look for. One of the great surgeons of our time has a sign in his office, lettered in crayon on cardboard, obviously designed as a personal reminder, which reads "we see only what we look for, we look for only what we know". When Magellan's ship visited Patagonia, he sent a landing party ashore in small boats. The natives were aware of the small boats but could not see the larger ship because such objects were outside their experience and ken. Small boats they understood. Brigantines were impossible for them to comprehend and apparently completely shut out of their perceptions.

It is not a universally popular view but I suggest it is realistic and useful to look at universities as complicated, pluralistic open systems. I congratulate the planners of this conference on an important and sophisticated theme. The view that I will present and attempt to defend today is that as a type of pluralistic open system, universities function most naturally and most comfortably as political systems undergirded by strong democratic ideologies.

The model is a difficult one for us to see and to accept. I suggest that we are predisposed rather to see campuses as hierarchical organizations directed from the top. I know this announcement will be received with some resistance. After all, everyone, and certainly we as academicians, are aware that the view of campuses as hierarchies must at least be qualified and nuanced prodigally before it approaches reality. To push the point, however, I suggest that even though we are aware of the inadequacies of the model, it has a higher specific gravity in our secret persuasions than we wish to recognize or accept.

The model in rough outline presents the campus as pyramidal with a board of trustees above the pyramid a bit to the left or right of its apex. The board members in this view, when they do not stray from propriety, are individuals who are aware of the difference between policy-making and management and who concentrate on the former and generally avoid the latter. The job of trustees is to give general policy guidance to the president of the institution, to defend the institution from critics, to raise money, and otherwise to mind their own lofty business and leave the campus alone except to attend concerts and art exhibits. The president (and it is a macho view) is a man with eyes the color of a battleship and a rock hard jaw who controls the institution by the force of an iron will.

In our stereotype he is a cross between Robert Maynard Hutchins and a shark with just a touch of Mary Baker Eddy thrown in for mercy and healing.

The deans in this view are the strong and willing servants of the president who understand a chain of command and follow protocol scrupulously. They take their "orders" from the president and carry them out with skill, determination and intelligence.

Below the deans in the pyramid are the faculty who in this stereotype are only interested in teaching and research, in their students and their own scholarship. The stereotype even allows for a few abrasive or otherwise unsteady people who must be accepted as the inexplicable penalty of gathering talented people together. In this view, however, these individuals are in the minority. Not only do most of the faculty not care about administration, they do not wish to be involved in the management of the university and are really too impractical to be trusted with significant decisions that affect the institution or even significant information about its intimate workings.

According to the stereotype, below the faculty in the pyramid are the students who are there to get their little buckets filled. Students recognize that faculty members know more than they. They are deferential to the greater wisdom, experience and training of their senior colleagues and, apart from a few troublemakers, they are on campus to learn and perhaps to indulge in generally harmless hi-jinks accepted by the knowledgeable with a shrug, a wry smile and comments about the unsteadiness of youth.

Remember, I am speaking of a stereotype. There is a darker side to this stereotype. The unsteady members of the faculty and student body can far too easily influence larger numbers to mischief and insurrection if the entire operation is not carefully controlled. After all, students are young, immature, and unsteady. Too many members of the faculty are unworldly and impractical. The ideal administrator, therefore, is tough, paternal and discipline oriented.

Apart from the fact that this stereotype isn't very realistic, we may shrug and ask ourselves "what's the harm?" The harm is that the campuses don't operate this way at all. It's an unrealistic picture. The stereotype is so unreal in fact that almost any attempt to explain how campuses operate using the model begins to rely on pathology. Almost everything of significance that occurs on the campus day-to-day must be explained as a deviation from the stereotype.

At this point, you may cavil "but that stereotype is vastly overdrawn and I doubt if many people accept it. Certainly I do not." I suggest that we all accept this stereotype to a greater degree than we recognize and that the hidden character of the acceptance renders it more dynamic and mischievous. Let me call to your attention a few instances of the way in which we think of campuses as more hierarchical that we are rationally persuaded they are or ought to be. Someone once said, "Everyone wants a strong president", and by that they mean, "someone who will pursue their pet objectives ruthlessly". Such a latent demand is very hierarchical. Or, again, when a community newspaper attacks the campus book store for displaying "dirty books", the hidden assumptions behind the attack are custodial and familial in the most traditional sense. I once had a telephone call suggesting that I forbid members of the faculty from mowing their grass before three o'clock in the afternoon. Hierarchical assumptions are at work in such a demand. Again, which of us has not been treated to exercises in impatience from our colleagues who "want to cut through all the red tape and get things done". The impatience with procedures, the impatience with the involvement of many people in a decision that will affect them profoundly is a mask for more hierarchical assumptions about campuses than are realistic.

For purposes of today's discussion, I should note that hierarchies are relatively impermeable. The pyramid should be open only at the top and the bottom. "Outside" influences must be processed through appropriate channels. If ever such a state of affairs was characteristic of campuses, it is obviously a condition that no longer reliably obtains.

It is sometimes difficult to comprehend why the university should have come to be viewed as pyramidal. I suggest that the reasons are partly historical. There was a time when students attending college were as young as twelve or thirteen years. Campuses professed to stand in loco parentis. Such familial assumptions presupposed a hierarchical view. There are other reasons. The campus upheavals of the sixties contributed to the notion that universities are inhabited by rude, immature and impractical students and sometimes professors who are badly in need of keepers. Campus disruptions contributed to the view that campuses should be pyramidal in authority structures.

Finally, perhaps campuses have come to be regarded as custodial, familial, and pyramidal because students are regarded as largely economically dependent. Anthropologically, members of a society are regarded as adult, not when they reach sexual maturity, but when they reach economic independence.

It is, of course, possible to view campuses through other lenses, many of them more sophisticated, although perhaps not as ubiquitous, as the model here outlined. I would like to suggest the political/democratic model is one that I believe to be realistic and a more nourishing one for researchers.

Woodrow Wilson once made the remark that he learned his politics as a young man on the campus of Princeton University and then in the latter part of life practiced among the amateurs in Washington. We are all similarly, if not as articulately, aware that political behavior flourishes on campuses.

I will not attempt to draw a tight or narrow definition of "political". Rather let me list and briefly elaborate what I mean when I say that campuses operate like political/democratic communities.

1. First is the obvious fact that the ideology of a campus is strongly egalitarian and democratic. Harlan Cleveland has expressed the view that the ideal campus organization chart would be a straight horizontal line. Academics think of themselves, and to a considerable degree properly so, as independent professionals who operate best on their own except for such professional consultation as they may require from like-minded colleagues. To this extent, they view themselves as like and, indeed, are somewhat similar to the surgeon standing at the operating table. A hierarchical organization is regarded as at best a necessary evil. Whether this view is realistic or not, nevertheless it is there. It is a part of the character of campuses and the professionals who inhabit them. On university campuses, at least, the deepest commitment of the academic is to his own professional field and to colleagues with similar scholarly interests dispersed all over the world. The primary loyalty of the scholar is not to the home department or even the home campus. Just as the first loyalty of the surgeon is to medicine writ large and the first loyalty of the priest is to God rather than the church, so the first loyalty of the scholar is to scholarship. Such views provide a strong undergirding for the egalitarian and democratic ideology of academic institutions.

2. Campus leadership operates with the consent of the members of the academic community. Please note that I said consent, not approval. The heart of the intimate metabolism of a campus is what goes on in the classrooms and the laboratories. The consent, therefore, of those working in the classrooms and laboratories is absolutely essential for the campus to function properly or perhaps for the campus to function at all. Hierarchical models do not work well in an organization such as this. A corollary of the consent of the governed is the view that individuals should be consulted before decisions are taken that will affect them. One of the most damaging charges (eroding of support) that can be leveled against administrators is the allegation that decision have been taken nonconsultatively; that the members of the academic community have not known about a decision that has been reached until it is promulgated. We note that the five sub-themes of this conference are:

    1. The cancellation of classes.
    2. Outside funding.
    3. Inter-institutional cooperation.
    4. Manpower planning.
    5. Adult education.

    The last four certainly imply and require open systems approaches to problem-solving. Even the cancellation of classes has implications which go beyond the geographical limits of the institution. I submit that these problems will best be met by openly and vigorously embracing more dynamic and fluid notions of campus governance and campus operations than we have historically been accustomed to accept. It has long been established that the cooperation of individuals affected by a problem in solving such problems will yield a happier result.

3. One of the classic definitions of a political community is that it is an organization within which there is a competition for scarce resources. Certainly campuses would qualify as political by this criterion. I

would add only that campuses are composed of constituencies not from individuals that compete for these scarce resources. There is never really enough money to go around on a campus. Campuses are insatiable. There is never a final closure to their responsibilities, if they are vigorous and healthy. This is the way it should be. This state of affairs, however, imposes pressure on the money available to accomplish the tasks at hand. I should nuance this observation by adding that the competition for the scarce resources on the campus proceeds under certain rather clearly understood rules. The competition is based on the assumption that all groups have a right to compete and that the rules of fair play for such competition are generally understood and subscribed to. This competition for scarce resources does not, for example, have as its ultimate objective or intent the elimination of other competing constituencies. Competition is regarded as inevitable and "normal" as long as it is conducted within rules regarded as fair.

4. One of the characteristics of campuses that in my view is also clearly political is the existence of dialectic change strategies. A thesis is presented by some member of the academic community. The thesis calls forth a strong antithesis. Out of the resulting controversy, at least on a well functioning campus, a synthesis usually emerges. This synthesis may in turn become another thesis. Remember, that on a campus nearly every problem once started out as a solution.

   Often the members of the academic community decide what they want by deciding first of all what they do not want. Once I heard one president say in exasperation, "All I need to do to find out what this faculty thinks is to make a decision. Then I discover immediately what the faculty wants -- just the opposite." The offended character of this remark again reveals assumptions that are unrealistically hierarchical.

   Another way of looking at this dialectic might be the pendulum. In democratic societies at least, the pendulum seems to be the most reliable predictor of future events. Sometimes it seems as though we swing from excess to excess and that much of our activity in between swings consists of correcting the problems of excess. Somehow the end result is better than the process.

5. It has always seemed to me that one of the ways in which campuses are clearly political is in the character of the exaggerated rhetoric with which campus problems are usually discussed. Outsiders are often amazed at the spectacle of academicians with briefcases, glasses and every appearance of steadiness attacking one another and the issues which separate them in the most intemperate and shrill language available in the culture. We have come to respect the rhetoric of public politics to be exaggerated and shrill but it always comes as at least a faint surprise when the same exaggerated and shrill rhetoric appears in campus dialogue. It should not be surprising that such intensity is characteristic of any political community. The words that move men's souls are epithets like "liar", "tyrant", "coward". People simply do not go to war over the footnotes. Exaggerated rhetoric is a way of joining people to the issues.

6. Yet another characteristic of campuses which is political is the need for coalitions. In political communities coalitions are a fact of life

— so then on campuses. The upheavals of the sixties were possible in part because students and faculties joined together in common protest. Even in these usually calmer days when students, faculty and/or staff are running a temperature over common concerns, it would be an unwise president who would ignore such agitations.

7. In spite of the intemperate character of campus rhetoric and in spite of the strong tendency of campuses to form coalitions, compromise strategies are really the preferred mode of problem solving. On the most equilibrated campuses, resistable forces seem to meet movable objects and, apart from some intemperate rhetoric, most of the issues are somehow resolved by compromise, assimilation and accommodation.

I would propose that non-hierarchical models of campuses are, indeed, more nourishing for institutional researchers and planners than are hierarchical models. And that, indeed, when campuses are viewed as open systems, there are significant fringe benefits that follow. For one thing, risk taking becomes more acceptable. Hierarchical models emphasize authority. As a corollary of an emphasis on authority, the question of "Who is responsible?" becomes very important. When that question becomes a chief agenda item, the avoiding of blame and the avoiding of risk preempts problem solving behavior. Where authority is seen as dispersed and where the preferred mode of operation requires extended discussion and active compromise, risk taking is not so threatening.

There is also under more open models of campuses a freer exchange of information. In hierarchical structures, information is power. Where problem solving and compromise are more important than authority and power, information has a different meaning.

In very subtle and real ways, institutional researchers will be involved in the problem solving behavior necessary to meet the challenges of declining enrollments; the competition for new student markets, efforts to secure outside funding and the establishment of new models of the inter-institutional cooperation. They will be asked by administrative teams to supply data to support the necessary cancellation of classes and be involved in decisions as to when classes should and should not be cancelled. All in all, institutional researchers have a great stake in more realistic models of how campuses do and, indeed, should operate.

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INSTITUTIONAL RESEARCH AS A PROFESSION:
A REVIEW OF THE 1979-1983 YEARS

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Background

At the first AIR European Forum at the Sorbonne in Paris in 1979 (Cossu), the topic of Institutional Research as a profession was addressed. The purpose of this present paper is to update that Address and to speculate on some future directions of institutional research as a profession. A key sentence was quoted at the Sorbonne Forum from W.M. Crawley who, in 1959 (Axt and Sprague, 1960) said, "We need to associate in order to learn from one another, to undertake common projects, and to persuade those in seats of power to give heed to the immediate and potential value of our work". A review of the last five years, principally through the European AIR Forum, shows that members from several European countries have associated together and learned from one another. They have learned about the differences they share and have learned about those things they hold in common. Except for the Forums there have been few common projects and only limited efforts "to persuade those in the seats of power to give heed to our immediate and potential value". In the years ahead it will be necessary to identify some comon projects to provide mutual benefit so that institutional research can become more clearly identified in more countries and so that benefits can accrue to higher education everywhere.

Definition of Institutional Research

Perhaps the best definition of institutional research appears in a brief monograph written by Joe Saupe of the University of Missouri (1981). It clearly states what institutional research is and how it is practiced. Dr. Saupe says, "Institutional research is research conducted by an institution of higher education in order to provide information which supports institutional planning, policy formulation, and decision making. The institution may be a single campus, a multi-campus system, a state or provincial system, or an even larger grouping of colleges and universities. Although the activity of institutional research is commonly associated with the individual campus, it is carried out within higher education systems to serve the governance responsibilities which reside there. Institutional research can be distinguished from research on higher education which has as its purpose the advancement of knowledge about and practice in higher education generally. The subject of institutional research is the individual college, university, or system, and results which have implications beyond this subject are not sought" (p. 1).

Recent Institutional Research Trends

The higher education issues and institutional research data of the past five years can be found in the programs of the AIR Forums and in the articles

TABLE 1

Areas of Interest in Institutional Research

1979-1983

	HIGHER EDUCATION ISSUES	INSTITUTIONAL RESEARCH DATA
PROFESSIONAL	Policy and Innovations	A.I.R. and Methodology
STUDENTS	Characteristics and Outcomes	Enrollments and Retention
RESOURCES	Planning and Administration	Budgeting and Allocations
FACULTY	Tenure and Collective Bargaining	Productivity and Workload
PROGRAMS	Curriculum and Instruction	Review and Discontinuance
TECHNOLOGY	Information and Management	Cost and Utilization

which have appeared in the monographs under the series title, New Directions for Institutional Research. A systematic categorization system, which is found in Table 1, takes the topics typically discussed in the literature of institutional research (the professional aspects, students, resources, faculty, programs, and technology), and relates them to either educational issues or to ways of treating data. Like any classification system it is imperfect in that a particular article which deals with two or three of these aspects may belong in two categories. While the six major topics present few problems, there is not a reliable distinction between topics treated as a higher education topics issue or treated as an institutional research data issue.

Categorical Issues

The professional issues of higher education include a wide variety of topics. Individual publications would include such things as non-traditional learning, special provisions for handicapped students, legal issues, and an evaluation of statewide planning agencies. The institutional research professional concerns have either to do with the direction of Association for Institutional Research or specific methods within institutional research such as regression analysis for faculty salary studies.

The second major topic concerns students and as higher education issues we find papers on academic skill development, perspectus of students on institutional quality, and the relationship between college grades and adult achievement. When students are treated as an institutional research topic, we find such papers as dropout at the Distance University in the Federal Republic of Germany, attrition of full-time freshmen, and an evaluation of state-imposed enrollment limits.

When resources are discussed as issues of higher education, the planning and administration topics include such things as measuring inflation in higher education, the demand for higher education, and state level studies in the economic impact of higher education. When looked at more narrowly as a budget and allocation question, such topics as methods of fixed and variable costing concepts in student-based models, university wide zero-based budgeting, and cost analysis and overhead charges are presented.

Topics of faculty policy in general involve such issues as tenure and collective bargaining, and papers which deal with faculty stress commitment of part-time faculty and quality of life issues for university employees. Under the institutional research topics of productivity and workload such topics as a legislative faculty salary model, allocation of faculty resources, and market factors of university salaries are studied.

The curriculum and instruction sections deal with program evaluation as an aid to instructional planning, goal definition as a means of assessing qualitative outcomes, and structuring the perceived outcomes of higher education. More narrowly, the topics of review and discontinuance of programs are discussed under such headings as where shall the financial ax fall, financial exigency, faculty security, and methods of measuring institutional productivity.

TABLE 2

A.I.R. FORUMS

Areas of Interest
1979-1983
(Number of Sessions)

		HIGHER EDUCATION					INSTITUTIONAL RESEARCH				
		79	80	81	82	83	79	80	81	82	83
PROFESSIONAL	(101)	8	9	20	11	8	3	6	12	15	9
STUDENTS	(68)	4	3	6	7	4	12	3	7	11	11
RESOURCES	(58)	11	9	10	7	7	3	4	2	2	3
FACULTY	(38)	9	0	6	7	3	3	0	3	5	2
PROGRAMS	(28)	3	3	2	0	1	7	4	2	3	3
TECHNOLOGY	(23)	2	2	2	3	2	1	0	4	1	6

A relatively new topic of growing importance is that of technology which is treated on two levels. When people talk about information and management information systems, they generally talk about systems which are compatible in many institutions of higher education and so such topics as implications of changes in technology for post-secondary education, humanizing academic information systems, and the technological revolution are discussed as policy issues. More specific topics such as advanced applications in microcomputers, computer graphics, and the integrator role of academic computing are discussed.

AIR Forums

The second table shows the areas of interest in terms of the AIR Forums, which were held from 1979 through 1983. During this five-year period, there were 316 contributed papers. The contributed papers are submitted in proposal form to a review committee who then selects those papers which seem to be the most promising for presentation. Some of the variation from year to year has to do with the theme of the Forum, while the themes themselves reflect, to some extent, the major ares of interest during that year. The theme for 1979 was "Issues for the 80's"; for 1980 the theme was "Meeting the Challenges of the 80's: Redirection of Resources for Renewal"; in 1981 the theme was "Toward 2001: The Institutional Research Perspective"; in 1982, "Responding to Qualitative and Political Issues"; and in 1983, "Integrating Human Resources and Technology". The themes are, by design, general enough to cover the many activities institutional researchers participate in and seem to show a direction toward an interest in technology and future planning.

The 316 sessions focused mainly on issues dealing with professional concerns. About one third of the papers dealt either with the general area of higher education, specific concerns with the Association for Institutional Research or the methods which institutional researchers use. It is interesting to note that, in 1979, there were only three papers which dealt with methodological issues in institutional research and in the later years that number has grown dramatically. The concern for students and student enrollment predictions has always been a central focus of the Association meetings. Topics concerned with student learning and outcomes are of less importance. Such papers on topics relating to student learning would probably be presented at other professional meetings dealing with research in higher education. Resources have played a major part in the Association meetings, but, as these figures indicate, the interest in planning has reduced over the last several years but still occupies a significantly greater part in the program than the narrower issues of budgeting and resource allocations. The growth in interest of faculty was probably highest during the time when collective bargaining was a major issue. Lately, that issue has not been as prominent in higher education but issues of faculty productivity and workload still occupy a major place in the papers presented at these meetings. The interest in curriculum and instruction has declined in the Association for many of the same reasons that interest in student learning has declined - these topics are of major importance to other professional associations. Program and review and program discontinuance commanded more attention in previous years than they do today, but we see that the interest in this topic remains high on the part of the membership. Technology is a new interest for institutional researchers, and although they have generally been interested in the management information systems questions, they have lately become more interested in the hardware and software, perhaps because of the development of the microcomputer and its use for planning within offices of institutional research.

TABLE 3

A.I.R. FORUM

Areas of Interest
1979-1983

(Attendance at Sessions - expressed in percent)

	HIGHER EDUCATION				INSTITUTIONAL RESEARCH			
	S	M	L	X	S	M	L	X
PROFESSIONAL	30	45	23	2	13	49	36	2
STUDENTS	29	54	12	4	31	34	24	7
RESOURCES	35	43	12	10	36	29	21	14
FACULTY	20	72	8	0	12	69	23	0
PROGRAMS	0	63	37	0	5	68	16	11
TECHNOLOGY	10	40	50	0	0	42	25	33

S = 24

M = 25-50

L = 51-99

X = 100

Attendance Patterns

Turning now to the third table, we see the attendance at these 316 sessions over the past five years. The professional issues of higher education provide an average attendance picture. About half of our sessions were attended by 25 to 50 people, about a fourth by less than 25 people, about a fourth by more than 50 people and occasionally, a session was attended by over 100 people. The attendance at programs on student learning were somewhat less popular than the average. Attendance on policy relating to planning has been declining. There is as great an interest in program discontinuance and program review as there is in the institutional research cost and utilization of technology. This increased interest reflects a growing interest in the area of microcomputers.

Monographs

The fourth table indicates the areas of interest as presented in that series of publications called New Directions for Institutional Research. There have been 40 issues, 20 from the period 1974 to 1978, and 20 from the years 1979 through 1983. Again, the areas of major interest are the professional issues and resources. There's very little interest in students, because there is another monograph series which deals with students. It is only the enrollment forecasting that is of interest specifically to institutional researchers. Issues of faculty and programs continue to occupy the time and attention of institutional researchers, but again, not as curriculum instruction, but rather as program discontinuance and review. Finally, the areas of technology are new and are now beginning to focus on the questions of microcomputers. It should be noted here that the purpose of the New Direction series is to cover all of the aspects of institutional research so that eventually it will take up all the topics.

In summary, then, this updating of the last five years shows a growing interest in the professionalism of institutional research. Interest was found in enrollment and retention studies, but not much interest in student characteristics and outcomes. There was a shift away from the broader questions of planning toward the narrower questions of budgeting and resource allocations. Interest continues in faculty, particularly questions of productivity and workload. Finally, attention to programs is growing, particularly to program discontinuance and review as opposed to questions of curriculum and instruction. We tend to be more interested now in areas of technology and the cost of using microcomputers in offices of institutional research.

Future Directions

The future of institutional research should reflect an increasing interest in the use of computers. This is consistent with international trends, but the specific question for institutional researchers has to do with how the role of the institutional researcher may be changed. Ben Lawrence, who is the Executive Director of the National Center for Educational Management Systems in Boulder, Colorado, expressed the opinion recently that the role of the decision maker will change with the advent of microcomputer software like VISICALC, Lotus 1,2,3, The Data Factory and other personal computer information

TABLE 4

New Directions for Institutional Reseach

Areas of Interest

(1974-1978) (1979-1983)

		HIGHER EDUCATION ISSUES		INSTITUTIONAL RESEARCH DATA	
		74-78	79-83	74-78	79-83
PROFESSIONAL	(11)	4	1	2	4
STUDENTS	(2)	0	0	0	2
RESOURCES	(11)	6	3	1	1
FACULTY	(6)	0	2	4	0
PROGRAMS	(6)	0	0	2	4
TECHNOLOGY	(4)	0	2	1	1
	(40)	10	8	10	12

management systems. He sees the decision-maker sitting in front of a microcomputer and arranging data in a very personal way. The past experience of many decision-makers in trying to use computers has been that they had been forced by the computer programmer to specify the problem in a way that was not familiar to the decision-maker. That is to say the requirements of the programming necessitated looking at problems in a particular way. That particular way may be the one that is most useful to the decision-maker, but only the one that is the most compatible with the technology. Many times the decision-makers ended up being frustrated and getting answers to questions they didn't want to ask, or getting answers that had to be so highly qualified that they lost any kind of impact as they tried to use an argument in the decision-making setting. In the future, Ben Lawrence believes that the decision-maker will be able to arrange data in a way that makes sense without consulting a programmer. What NCHEMS has decided to do instead of continuing to develop computer models as they did in the 60's and 70's is rather to develop formats of questions that decision-makers can ask when they use personal microcomputers. A task force is now working on this project, and within a year or so there might be some results. It would be well for every institutional researcher to take a look at this task and see if it's possible to design some formats, questions and reasoning patterns which may be useful to decision-makers who use personal microcomputers. While this may not be possible for the present generation of decision-makers, a new generation will use computers as a regular working tool.

A second area that seems to me to be one of growing interest is questions that involve research which requires very large data-bases on mainframe computers. It is now possible to run many analyses on a very large data set and to ask and answer some very sophisticated questions. For example, one current research project analyses all students who have changed majors in the Florida State System over the last five years. It uses 18,000 cases in each of the two groups under study. The analysis makes it possible to identify 29 different ways to display the data and programs the computer to estimate how well each of those 29 different ways provides the maximum information in a minimum of categories. To do this, the analysis runs all 18,000 cases 29 different times to see the goodness of fit with the model. Another study uses faculty salary data for 1,500 faculty members over the past 13 years. All of the demographic data on the faculty - each raise for each year, and information about their union affiliation, department, rank, administrative responsibility and etc. - form a prediction equation of what the salary ought to be and what the salary actually is and computes any discrepancy. A third study analysis computes any students in the Florida System by dividing them into five separate age groups. In each case, a large number of subjects are involved, sophisticated manipulation of large data-bases is made and computer intensive statistical techniques are required. The important thing, of course, is that the researcher not get lost in the analysis. It is important to perform the simple frequency counts, graph the data, try to understand the means and standard deviations, and only after some very careful and reflective thinking about the nature of the data itself and how to interpret it should a complicated statistical analysis be made. The analysis must be placed in a realistic context and kept interpretable at each step. In the future, it will become more difficult to keep things simple and more and more difficult to keep analyses basic enough so that they can be understood and used by the average decision-maker.

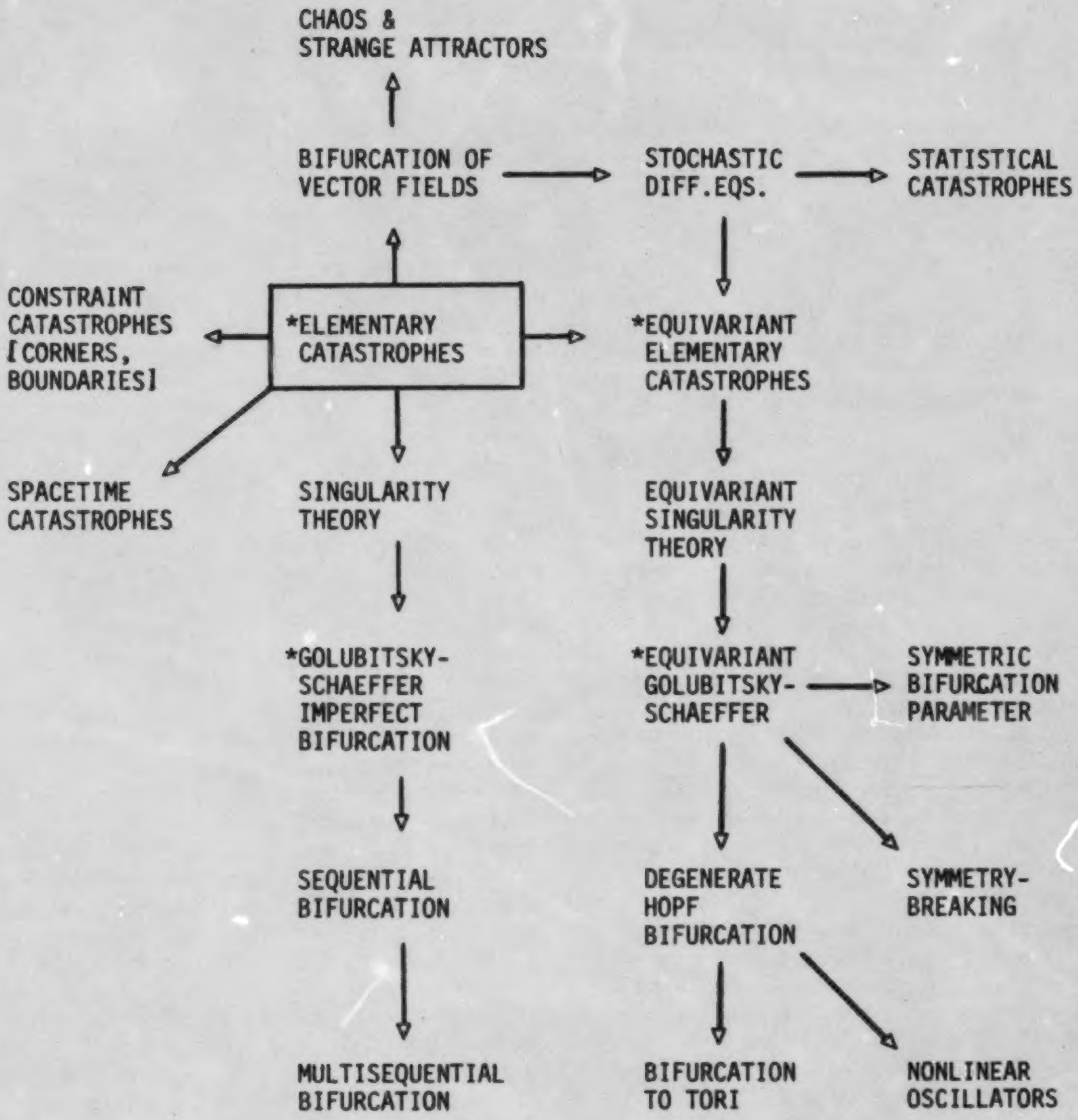
CHAOS &
STRANGE ATTRACTORS
BIFURCATION OF
VECTOR FIELDS
STOCHASTIC
DIFF.EQS.
STATISTICAL
CATASTROPHES
CONSTRAINT
CATASTROPHES
[CORNERS,
BOUNDARIES]
*ELEMENTARY
CATASTROPHES
*EQUIVARIANT
ELEMENTARY
CATASTROPHES
SPACETIME
CATASTROPHES
SINGULARITY
THEORY
EQUIVARIANT
SINGULARITY
THEORY
*GOLUBITSKY-
SCHAEFFER
IMPERFECT
BIFURCATION
*EQUIVARIANT
GOLUBITSKY-
SCHAEFFER
SYMMETRIC
BIFURCATION
PARAMETER
SEQUENTIAL
BIFURCATION
DEGENERATE
HOPF
BIFURCATION
SYMMETRY-
BREAKING
MULTISEQUENTIAL
BIFURCATION
BIFURCATION
TO TORI
NONLINEAR
OSCILLATORS

FIGURE 1. The main extensions of Elementary Catastrophe Theory and their interrelations over the past decade. (* indicates a variation which has been developed both in finite and infinite dimensions).

Finally, it is reasonable to expect new ways of conceptualizing and displaying data. One way to do this is to learn what we can from the many branches of mathematics and to use fundamental principles to attack the applied problems of institutional research. One important area is graphics. W.A. Simpson presented an excellent paper on monographs in Toronto in May. The study of catastrophe theory can open up some very intersting possibilities for a three-dimensional graphics.

An Example of Applied Mathematics

A study supported by the United States Office of Naval Research (ONR) reports on the State of the Art of Catastrophe Theory and Applications to Organizational Effectiveness and has as a premise that institutional researchers should be involved at the leading edge of new methodology development for use in institutional research. It argues that it is relatively easy to wait until the disciplinary specialists have developed techniques and then to use what bits and pieces we can in a toolbox of institutional research methodology. Perhaps this can be accomplished through the recently established AIR special interest group dealing with the applications of non-linear models in institutional research. While a clear, well-developed example is several years away from us in institutional research, it is important, nevertheless, to keep current on developments of this kind.

Topics of Concern

Mathematical models can give the impression of understanding a rather complex problem. Whether this is real understanding or the illusion of understanding is not always so clear. Carl Simon, from the University of Michigan, summed up this point best in the ONR report when he said,

> When carefully applied, catastrophe theory can also provide rich, modeling vocabulary which draws the modeler's attention to such key concepts as genericity, structural stability, and behavioral surface . . . although it is based on some incredibly sophisticated mathematical theorems, it can usually be explained quickly and completely to anyone who is comfortable with the elementary mathematic concepts so that the student can not only read papers which use catastrophe theory but even consider writing one himself. However, this ease in quickly explaining the concepts of catastrophe theory to a neophyte leads to one of the major problems that have arisen in the controversy over catastrophe theory, namely the belief by some that one can make catastrophe theory the corner-stone of mathematical modeling in the social sciences. As enthusiastic as I am about the successes - both actual and potential - in using catastrophe theory in social science models, I do not think it is at all wise to encourage hopes that catastrophe theory be the corner-stone of social science modeling. After all, catastrophe theory is just one tool in the standard mathematics modelers tool box."

The context of catastrophe theory appears in Figure 1 which shows the main extensions of elementary catastrophe theory and their inter-relations over the past decade. This was put by Ian Stewart, and if you are familiar with reading things in catastrophe theory, you will recognize the relationship to singularity theory, bifurcation, and then the work that Cobb is doing in stochastic differential equations and statistical catastrophes. From the two points of view of Simon and Stewart, at least catastrophe theory is part of a long mathematical tradition. As a matter of fact, another of our experts, Lawrence Markus extended the context in a paper entitled, "Thousand Years of Catastrophe Theory", in which he starts with the early work on conic sections and ends up with the work of Rene Thom. Again, the point is made regarding the relative ease of capturing complex concepts simply and of the complexity of the context.

The second concern is the significance of hysteresis in social science. Anyone who has worked in electrical engineering or in physics is familiar with the concept, but many social scientists feel that if the multi-valued surface created by hysteresis appears in social science data, it is probably a mistake. This stems from the belief that a function exists on a smooth, not folded, response surface. If indeed there is a multi-valued response surface, modern statistics needs to take this into account. Richard Savage makes a point of this in his ONR paper when he stated,

> Although current graphic techniques are very good in examining data in three-space, it is not clear that visual cues would be adequate in most situations with the social data to make a strong argument for or against a multi-valued response surface. This class of problems might require new statistical techniques. Also, if multi-valued response surfaces were suspected, there are alternatives to catastrophes. In particular, many scientists and statisticians might search for additional control variables in order to obtain a nicer surface. This traditional approach would be appealing in those situations where the dynamics have not been explored and a detailed modeling effort has not been made. If data can be obtained in this form, there are a host of statistical techniques that need development. Treatment of these topics is not out of the range of statistical theory. The lack of technique appears more to be a lack of demand than a lack of ability. The bottleneck in applying catastrophe theory to social science material is to find appropriate situations where adequate data can be obtained.

This viewpoint of Savage poses one of the more interesting dilemmas in our year's work. The statisticians we worked with were willing to develop the techniques necessary to look at catastrophe theory if enough applications could be provided. It is, of course, difficult to make the applications without the statistical technique to identify them. Several suggestions are contained in the final report for ways around this dilemma, but it remains a major stumbling block.

Implications of Hysteresis

If one accepts the multi-valued response surface, then there are, according to Loren Cobb, four major statistical implications of catastrophe theory. First, the hysteresis effects observed in catastrophe models suggest that scientific experiments must take into account the history of each experimental unit. Second, there are so many difficulties associated with reliably deducing the presence of a catastrophe from a snapshot (i.e. single point in time) studies, that the use of time series methods would surely increase. Third, when snapshot data are all that is available, it is still possible to infer much about the underlying dynamics of the system by analyzing the shapes and higher-order moments of the observed frequency distributions. And fourth, that social scientists have very few exceptions, avoided differential equations as a tool for theory construction, probably because of the patently non-deterministic nature of the social process. This leaves us with the question of whether the hysteresis effects in the multi-valued response surface are significant phenomena in the social sciences and whether we ought to be studying them. If we can identify such surfaces then a lot of work will have to be done in statistics before we can proceed with applications in areas of institutional research.

The third concern which arose from our study has to do with linearity. In the commentary to Ian Stewart's paper, one of the reactors said,

> Some thoughts on linearity are stimulated by Stewart's article. More precisely, the existence of some kind of naturally occuring linear relationships among variables is something that cannot even make sense in the social sciences. Scales in the social sciences are not universal, but based on naturally occurring constants and essentially arbitrary inventions of the researchers. The concept of linearity is defined only at the level of scale. Therefore, linearity is not the class of properties that social science variables are allowed by nature to possess. In fact, one of the ways social science researchers can turn out to "look good" is for those researchers, through intuition, experience, and insight to choose the scales for variables in such a way that they end up with linear relationships among scaled variables. This "choice of scale" should not be seen as unworthy. Indeed, this is often a contribution of great value. We should keep in mind, however, what is proved: that the variables themselves are pseudolinearly related, using Stewart's term.

This term "pseudolinearly" was introduced by Ian Stewart in his paper which Richard Savage reviewed to some of the work which is being done on nonlinear time series analysis to deal with this problem. What we have is an unresolved question about the basic nature of social science research and therefore the applications to administration in institutional research.

Finally, a concern was expressed about the need for team effort. In practice, any project should involve a mathematician thoroughly schooled in topology, a statistician who is aware of non-linear time series analysis and a practicing administrator who knows and understands the problems of the real world. Even with such a team, there is no guarantee of success. Few mathematicians have any idea of the variables involved in the social sciences. The social scientist most interested in catastrophe theory have been those social scientists which are furthest away from quantitative or mathematical concepts. And finally, most of our administrators view catastrophes as problems and something which should be avoided altogether. Nevertheless, when confronted with a real problem and focussing upon a single set of data, experts can bring the intellectual powers to the problem at hand. We found no advocate for the use of catastrophe theory in all situations. Many experts were skeptical about applications made without great care.

The Work Ahead

Institutional researchers need to continue to develop research methods and to share their efforts with other institutional researchers. The rewards do not come from what is learned about any one method, but rather from a deeper general understanding of such basic concepts as hysteresis, the relationship between linearity and scales, the role of chance in observations, and the applications of differential equations to new problems within the social science methods which open up new avenues of thought and enrich our understanding of the literature of institutional research. Perhaps in the next few years there will be some clear well-documented examples of the application of catastrophe theory to some problem in institutional research. Failing that all researchers should continue to seek new insights into the methodology of institutional research.

There are many reasons to be very positive and optimistic about the future of institutional research. Institutional research will continue to be done at every institution of higher education, no matter what title is held by the researcher. This research grows in the future because of the sophistication of the analytical techniques available and because of the computer-intensive statistical methods which are now being developed. The challenge is to stay even or ahead of the advances in the state of the art in computer analysis, and to learn the latest skills in a relatively short time. The professional role of associations will be to continue the updating of skills, and to hold meetings such as this to share information in order to realize a full potential and to continue to be a growth industry.

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PROGRAM REVIEW AT MICHIGAN STATE UNIVERSITY DURING THE FISCAL EXIGENCY OF FY 1980-81: A CASE STUDY

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Michigan State University

Introduction

Program review is currently a very active topic for discussion and will quite likely remain so for the remainder of the decade. At this point, most of the literature on program review purports to tell the reader how to conduct such reviews. An equally important approach is the narration of what actually occurs when a program review is conducted with the intent of curtailing or eliminating programs. The purpose of this presentation is to add another such case study to the rather sparse collection of those currently in the literature. Because the results of program reviews depend as much upon communications and politics as upon analytical techniques and data, most administrators and many researchers are interested in what can happen once an extensive program review is put into operation. A review of several case studies can prepare one for the most likely eventualities and perhaps enable one to forestall their occurrence by advance preparations.

This presentation, then, narrates the events within Michigan State University (MSU) that took place during FY 1980-81 - - a year of severe fiscal stress for the university and one which involved an extensive review and modification of programs.

To accommodate the needs of a European audience, the presentation briefly outlines the mission and characteristics of MSU and then moves on to indicate the major participants in the events and the connecting lines of communication. The ensuing events are chronicled and samples of data formats used at various stages are provided. After the results of the process are displayed, the study then concludes with a summary of the intense debates that centered upon certain issues and several general recommendations.

Characteristics of Michigan State University

The university began in 1855 as an agricultural college, supported by the state for the education of its citizens in the agricultural and mechanic arts. It was selected in 1863 for additional support by the federal government as a prototype for what was to become known as a land-grant college. These origins committed the university to placing a pronounced emphasis on applied and professional disciplines, a strong public service component, and a relatively open admissions policy. Such characteristics are still present today, but have been modified and augmented by the additional commitments implied by membership in the Association of American Universities which consists of the 50 premier research institutions in the United States.

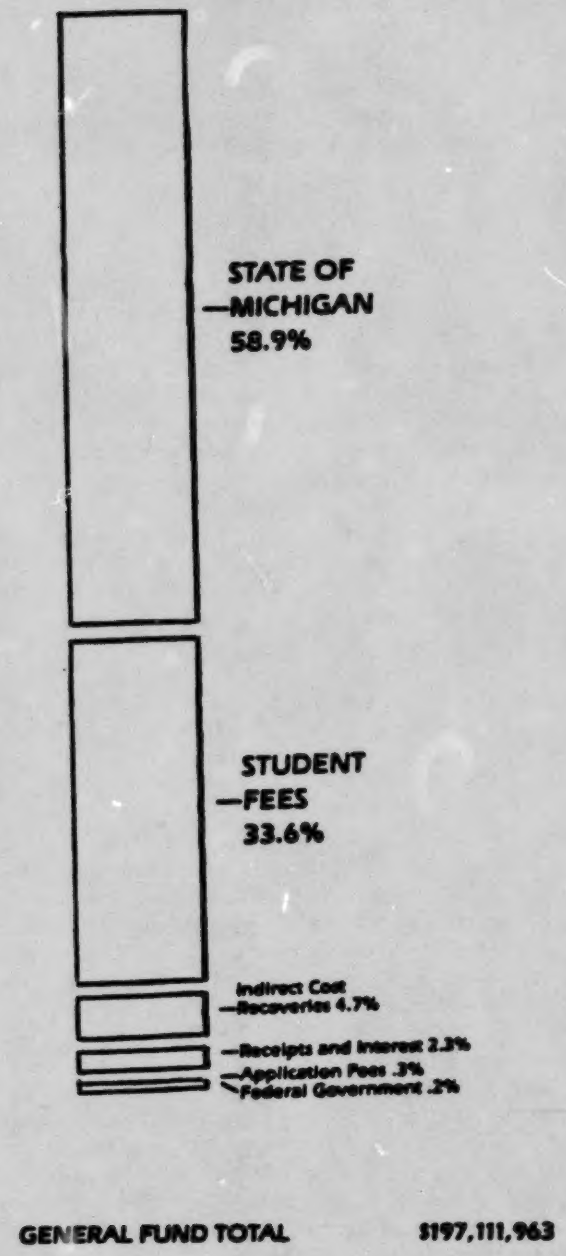

FIGURE 1. GENERAL FUND REVENUES 1980-81

Today the university has grown to one of the largest single campuses in the country. With a student body of 40,627, a staff of 8,373, and over 400 degree programs offered through 73 academic departments, the institution exhibits all the organizational complexities that have come to be associated with "megaversities".

Clearly, the fiscal support for such an enterprise has undergone a similar growth. The federal component of the budget that is related to the university's status as a land-grant institution is only $12M and is primarily in support of the Agricultural Experiment Station and the Cooperative Extension Service. Currently the institution relies most heavily on state appropriations (38%), with student tuition, auxiliary activities, and grant and contract funds for government research each contributing approximately 18%. Figure 1 focuses on those funds classified as "general" funds. These are the funds that can be used in a completely unrestricted manner to operate the university and, in a sense, represent the flexibility of the institution. Here we see that the state funding (58.9%) plays an even more dominant role in the fiscal well-being of the university. Since the instructional expenditures consume slightly over half (53%) of the General Fund revenues, one is led to two conclusions:

(1) Any dip in the level of state appropriations will have immediate and severe consequences related to the operation of the university.

(2) Any sizable reduction in the university budget will necessarily involve a reduction in the academic component.

The Fiscal Problem

Leading up to the critical 1980-81 year, the university had been experiencing successive years of budget growth of over 10%. Much of this was in reflection of inflationary costs as measured by double digit increases in the CPI. Suddenly in 1980-81 the university was faced with adapting to a 5% decrease in appropriations at the same time that the costs continued to rise at 8.8%. These changes equated to a 14.3% drop in funding from what might be considered necessary to maintain the status quo.

No large institution that is both labor intensive and legally bound to honor employee contracts can possibly make any large permanent reductions to its operating costs in less than two or three years. Thus, MSU administrators were constrained to regard the 1980-81 budget shortage of $10M as a cash management problem to be solved by such temporary measures as postponements of maintenance, purchases, and the filling of positions. The true fiscal crisis was not the appropriation decline of 1980-81 but rather the expectation that the 1981-82 appropriations would be at the same level. Since the temporary budget reductions made in 1980-81 could not be extended for yet another year, it became clear that permanent reductions had to be begun in 1981-82. Administrators reluctantly concluded that it would be necessary to carry out some program terminations and curtailments as determined by a formal program review process. Once this decision was made a series of related events was set in motion. The underlying rationale for terminating programs was to cut costs by eliminating the faculty associated with the programs. Since the termination of faculty, both tenured and under contract as probationary faculty, legally

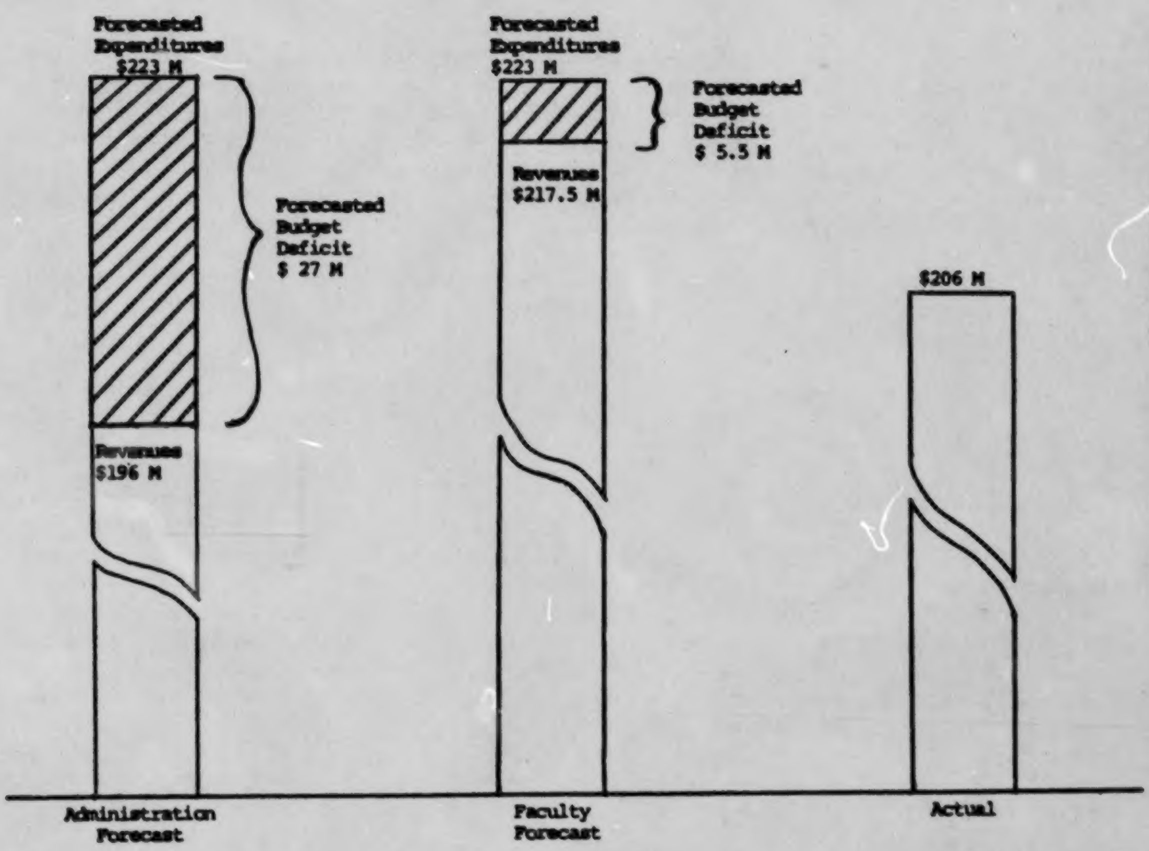

FIGURE 2. DEBATE ON THE FY 1981-82 BUDGET DEFICIT

requires some unique fiscal circumstance, it became necessary to declare a state of fiscal exigency. Rather than unilaterally making such a declaration, it was decided to present the financial evidence to the academic community and allow it to reach the same conclusion. The faculty, as represented by the Faculty Affairs Committee, rejected the administrative assessment as being unduly pessimistic and presented their own budget calculations to the Academic Council. These two forecasts are displayed in Figure 2 and are contrasted with what actually transpired. With respect to revenues, the faculty and administrative predictions were too optimistic and pessimistic, respectively. It is clear, however, that a reduction in expenditures of $17M was required - - a reduction that certainly could justify the label of "fiscal crisis".

After considerable debate across the campus, the Board of Trustees declared a "fiscal crisis" on 6 February.

The Process

Once the magnitude of the potential problem became apparent to administrators, they moved quickly to establish the procedures by which the deficit was to be eliminated. The process, as outlined in early December, involved two separate procedures that would be conducted concurrently and integrated late in the Spring (Figure 3). One procedure followed the usual budgetary pattern; the vice presidents were given budget reduction targets which they distributed across units and departments. The operational units then made up proposed reduction plans together with consequences and passed them back up to the vice president level (see Figures 4 and 5 for an example). After these plans were given to academic governance for comment, revisions were made and the plans forwarded to the President.

Simultaneous with these events, the President appointed a Select Advisory Committee of senior faculty from all sectors of the university. This committee, over the next five months, met in closed sessions under a charge to:

(1) make their own assessment of the fiscal situation;
(2) advise the President as to what options were available to reduce expenditures;
(3) recommend programs for elimination if such terminations appeared necessary.

On several occasions the committee requested data from the Office of Institutional Research that was relevant to a specific issue and a particular department. Typically these data reports were too voluminous to display in a short paper such as this. Such reports contained data related to cost and instructional workload comparisons with similar units, outside research funds attracted, the quantity and nature of the professional outputs of the faculty, the tenure status and age distribution of the faculty, the academic quality of the majors in the unit, current and projected enrollments in courses, and the graduation rate of the majors.

The recommendations of the Select Committee were presented to the President by late February; they included a list of programs/units suggested for elimination or drastic curtailment.

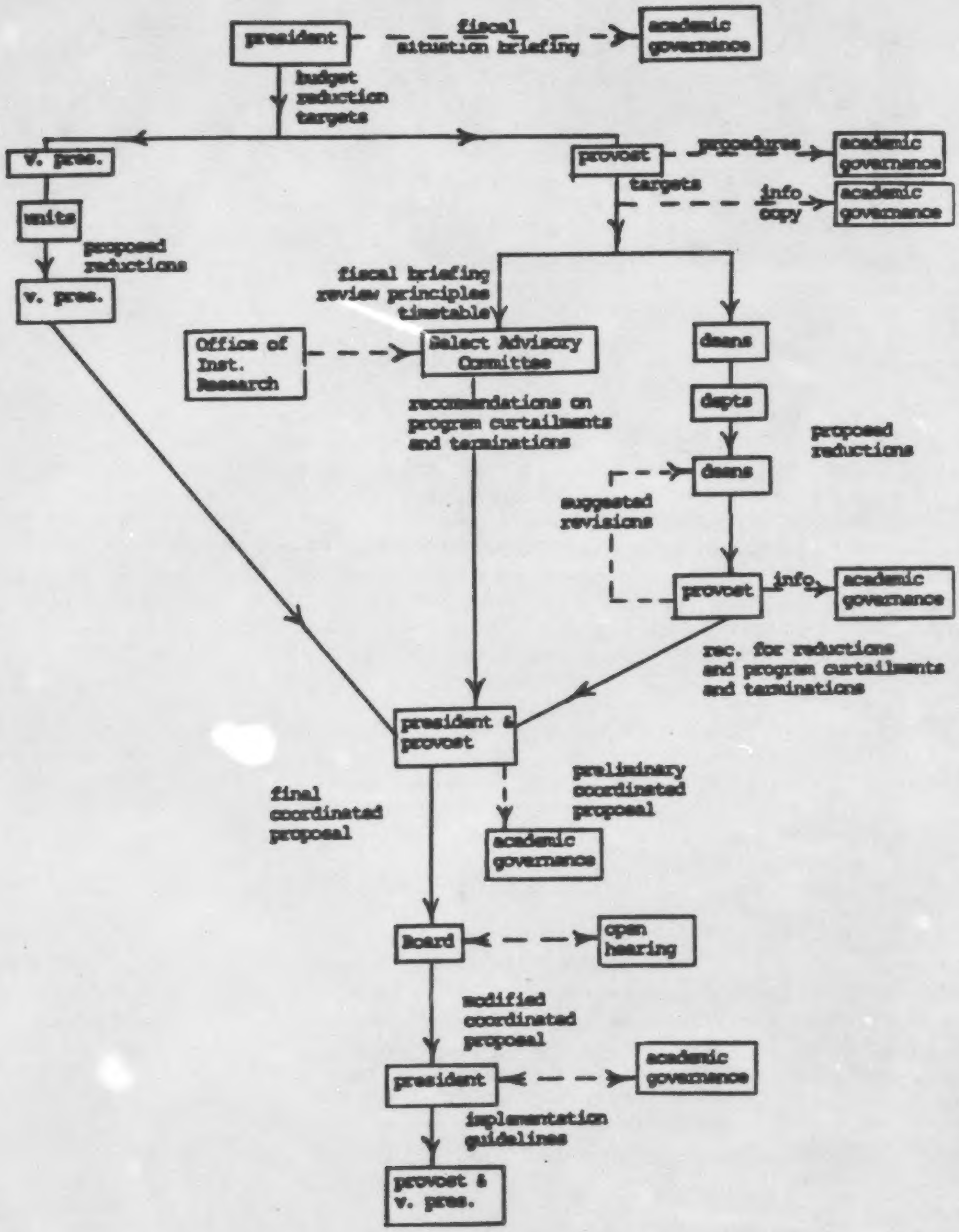
president
fiscal situation briefing
academic governance
budget reduction targets
v. pres.
provost
procedures
academic governance
targets
info copy
academic governance
units
proposed reductions
v. pres.
fiscal briefing
review principles
timetable
Office of Inst. Research
Select Advisory Committee
deans
recommendations on program curtailments and terminations
depts
proposed reductions
deans
suggested revisions
provost
info
academic governance
rec. for reductions and program curtailments and terminations
president & provost
final coordinated proposal
preliminary coordinated proposal
academic governance
Board
open hearing
modified coordinated proposal
president
academic governance
implementation guidelines
provost & v. pres.

FIGURE 3. PROCESS FOR CURTAILMENT/ELIMINATION OF PROGRAMS

JAMES MADISON COLLEGE March 4, 1981

ACADEMIC PROGRAM REDUCTION PLAN
FY 1981-82

The following list of reductions is premised upon incorporation of Madison College as a school or department within the College of Social Science. It represents a total reduction of 22% in funds allocated for the Madison budget.*

1. Eliminate College Funding for Residence Hall Directors and Graduate Assistants

Proposed Budget Reduction						$ 8,805
Proposed Reduction in Force (FTE)					.84	
All faculty ______	A-P	______	C-T	______		
	G-A	.55	Other	.29		
Faculty Breakdown:	Ten	______	T-S	______		
	Temp	______	CASJs	______		

2. Administrative Position: Dean

Proposed Budget Reduction						$ 25,000
Proposed Reduction in Force (FTE)					1.00	
All faculty 1.00	A-P	______	C-T	______		
	G-A	______	Other	______		
Faculty Breakdown:	Ten	1.00	T-S	______		
	Temp	______	CASJs	______		

3. Reduction in Size of Freshman Writing Program

Proposed Budget Reduction						$ 20,000
Proposed Reduction in Force (FTE)					1.00	
All faculty 1.00	A-P	______	C-T	______		
	G-A	______	Other	______		
Faculty Breakdown:	Ten	______	T-S	______		
	Temp	1.00	CASJs	______		

4. Reduction in Temporary Positions

Proposed Budget Reduction						$ 40,000
Proposed Reduction in Force (FTE)					2.00	
All faculty 2.00	A-P	______	C-T	______		
	G-A	______	Other	______		
Faculty Breakdown:	Ten	______	T-S	______		
	Temp	2.00	CASJs	______		

FIGURE 4. EXAMPLE OF A COLLEGE REDUCTION PLAN

IMPACT STATEMENT

1. Eliminate College Funding for Residence Hall Directors and Graduate Assistants

   Elimination of funding for some dormitory staff may affect the number of staff selected and negatively affect the quality of student life. It also eliminates advising services performed by directors and shifts additional burden to faculty and staff. Reduction in staff might affect women and minority aides, thus having direct negative impact on aides but also having a potentially adverse effect upon the College's attempt to increase its minority enrollment.

2. Administrative Position: Dean

   The elimination of the deanship would reduce by 1.00 the FTEF total in Madison. A director or chairperson chosen from the remaining tenured staff would serve as a half-time administrator and half-time faculty member. Given the contemplated smaller size of the unit, this arrangement should be manageable.

3. Reduction in Size of Freshman Writing Program

   The elimination of one FTEF from the Freshman Writing Program requires that enrollments be limited at the freshman level in order to maintain the quality of the program. An enrollment limitation may result in reduced revenue and may compound the anticipated problem in sustaining University enrollments. Elimination of a full-time staff member inhibits the opportunity for other staff members to teach upper-level courses in their specialties. The particular impact of this reduction falls upon affirmative action personnel.

4. Reduction in Temporary Positions

   The proposed reduction in temporary positions would require personnel and/or curricular cooperation with the Department of Social Science. If current personnel in both positions were eliminated or replaced by others from the College of Social Science, there would be a negative impact on affirmative action (one position).

5. Non-Programmatic Reductions

   These reductions reflect economies achieved as a result of affiliation with the College of Social Science and shared efforts. They would have relatively little impact on Madison services. However, both the Office Supervisor and the C-T are affirmative action personnel.

FIGURE 5. COLLEGE REDUCTION PLAN

The Provost and President integrated the budget reduction plans made by the vice presidents and the recommendations of the Select Committee and produced a package called the "Preliminary Coordinated Proposal" which was then widely distributed through the academic governance system and administrative channels for review and comment. After two weeks of debate and airing of opinions the proposal was given a final revision and presented to the Board of Trustees. Once again, the units most affected by the Coordinated Proposal, and their supporters, were given an opportunity to argue their case before the Board. On 7 April the Board approved a revised form of the proposal which then became known as the Modified Coordinated Proposal (MCP). At this stage of the process, attention was turned to how to implement the MCP, which called for the release of 125 tenure system faculty, in a manner least damaging to careers and the university.

The Participants

Figure 6 shows the primary participants in the 1980-81 budget reduction process and their relationships with each other. The President, assisted by the Provost, played a central role in the process by taking a clear position on all matters demanding a decision. Throughout the process unusual efforts were made to ensure that administrators, faculty committee members, academic governance representatives, and the academic community at large were kept informed as to the issues under discussion. At several points open public sessions were held with the President responding to questions or with faculty debators presenting both sides of an issue. Although full disclosure and open discussions are not enough to remove all elements of hostility and intense political strife from such proceedings, they nevertheless minimized these symptoms and eliminated any grounds for legal action based on failure to inform or permit faculty participation.

Results

The combined effects of the college reduction plans and the program curtailments and eliminations suggested by the Select Committee totaled $19M (see Figure 7). This is an overstatement of the short term net reductions because they were calculated from budget figures rather than actual expenditures. Also, other funds were needed both to finance the faculty buy-outs, early retirements, and other options and to continue the operation - through a phase-out period - of those units scheduled for elimination. The Modified Coordinated Proposal enabled the university to trim its budget growth from an annual rate of 14.7% to an average of less than 2% a year for a two year period - - a theoretical savings of $63M from what the costs would have been if growth was allowed to continue at the 15% rate.

With respect to program change, the results were rather dramatic. Twenty departments or units were curtailed, another 22 eliminated, and 6 were merged. In addition, 31 academic programs were curtailed and 34 eliminated. Figure 8 provides more details on the units most affected; those marked with asterisks were the subject of much political infighting - - the difference between the proposed action and the final action reflects the compromises resulting from these battles.

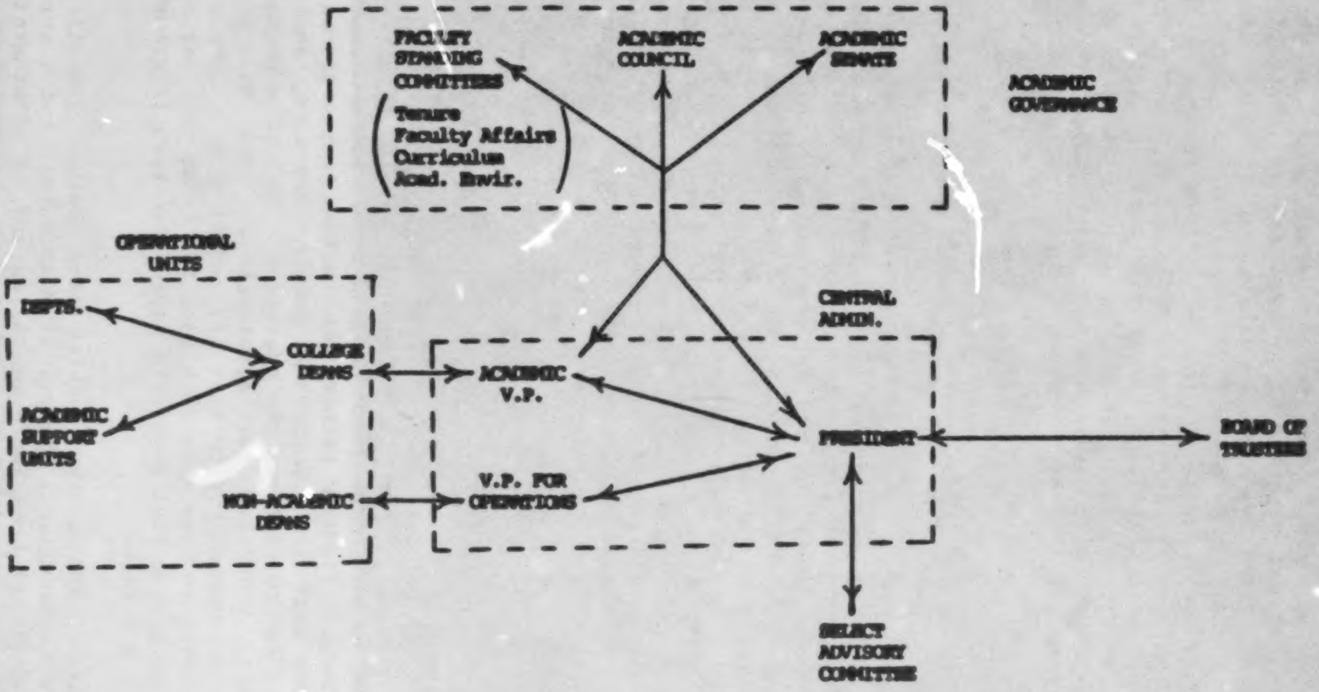
FACULTY STANDING COMMITTEES
Tenure
Faculty Affairs
Curriculum
Acad. Envir.
ACADEMIC COUNCIL
ACADEMIC SENATE
ACADEMIC GOVERNANCE
OPERATIONAL UNITS
DEPTS.
COLLEGE DEANS
ACADEMIC SUPPORT UNITS
NON-ACADEMIC DEANS
CENTRAL ADMIN.
ACADEMIC V.P.
V.P. FOR OPERATIONS
PRESIDENT
BOARD OF TRUSTEES
SELECT ADVISORY COMMITTEE

FIGURE 6. KEY PARTICIPANTS IN THE FY 1980-81 PROGRAM REVIEW PROCESS

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	1980-81 Base Budget	Coordinated Proposal Estimated Maximum Reduction	Percent
Agriculture & Natural Resources	$ 7,239,883	$ 907,000	7.9
Arts & Letters	12,100,552	1,219,466	10.1
Business	6,960,626	523,317	8.0
Communication Arts	2,683,856	134,000	5.0
Education	7,480,758	1,045,000	14.0
Engineering	4,978,059	249,200	5.0
Human Ecology	2,391,886	239,189	10.0
James Madison	565,659	125,805	22.2
Lyman Briggs	747,488	747,488	100.0
Natural Science	16,321,792	1,236,200	7.6
Nursing	1,209,384	1,209,384	100.0
Social Science	9,805,537	1,134,000	11.6
Urban Development	1,405,685	450,000	32.0
Lifelong Education	3,737,622	1,162,000	31.1
International Studies	933,762	203,441	21.8
Provost	12,400,884	2,399,163	19.3
Library	5,710,084	-0-	
Graduate School	397,077	158,748	40.0
VP Research & Development	2,001,248	260,800	13.0
SUBTOTAL	$ 98,673,842	$13,004,201	13.2
Human Medicine	$ 12,515,942	$ 1,366,861	10.9*
Osteopathic Medicine	8,466,641	1,023,710	12.1
Veterinary Medicine	5,805,493	606,188	10.4
Clinical Center	1,285,343		
SUBTOTAL	$ 28,073,419	$ 2,996,759	10.7
TOTAL Academic Units	$126,747,261	$16,000,960	12.6
Administration & Public Affairs	$ 3,581,329	$ 500,000	14.0
University Relations	877,192	132,000	15.0
Student Affairs & Services	3,212,450	449,743	14.0
University Development	698,941	50,000	7.2
Finance & Operations	4,540,208	401,8[illegible]	8.9
Financial Operations	3,898,261	467,036	12.0
Physical Plant	8,295,261	1,136,789	13.7
Health Services	152,851	22,928	15.0
TOTAL Nonacademic Units	$ 25,256,493	$ 3,160,351	12.5
TOTAL Main Campus	$152,003,754	$19,161,311	12.6

FIGURE 7. BUDGET REDUCTION SUMMARY

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Preliminary Coordinated Proposal	Final Coordinated Proposal	Board Modified Coordinated Proposal
Merge Religious Studies Dept. & Philosophy Dept.	Same	not approved
Merge the German & Russian Dept. and Linguistics African Language Dept.	"	approved
Eliminate Biophysics Dept.	"	"
Eliminate the Math and Science Teaching Center	"	"
Eliminate the Dept. of Medical Technology	Retain as a "program" option in medical technology	"
* Eliminate Astronomy Dept.	Merge Astronomy & Physics Dept.	"
Close the Planetarium	Yes, unless it can be made self-supporting	"
Eliminate the Justin Morrill Inter-college Program	Same	"
* Eliminate Social Work Dept.	Retain Social Work Dept. & eliminate Urban Planning & Landscape Architecture	retain both
Eliminate the Bureau of Business & Economic Research	Same	approved
Merge the Higher Education Administration Dept. with the Student Personnel Administration Dept.	"	"
Eliminate the Office of Medical Education, Research and Development	"	"
* Eliminate Lyman Briggs College	Same	Retain as a school with- in Nat. Sci. College
* Eliminate James Madison College	Retain the College	approved
* Eliminate the College of Nursing	Recommend elimination but give the Board the option of continuing with increased tuition & reduced enrollment	Retain at a reduced enrollment
Eliminate the College of Urban Development & establish a graduate program of Urban Affairs	No change	approved
* Eliminate the Highway Traffic Center	Retain some functions within existing programs	Retain the center but require that it become more self-supporting
* Drastically curtail the American Thought & Language Dept.	Same	Reinstate original budget & staff
* Drastically curtail the Nat. Science Dept.	"	"
* Drastically curtail the Soc. Science Dept.	"	"
* Drastically curtail the Humanities Dept.	"	"

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FIGURE 8. MERGER/ELIMINATION OF MAJOR UNITS

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The personnel actions deriving from the curtailment of programs are outlined in Figure 9. Many of these eliminated positions (approximately half) were open positions and did not involve the termination of incumbents. The category carrying the most serious threat of legal action was that of "tenured faculty". The program reductions rendered 111 tenured faculty members jobless. Of these, 36 were shifted to open faculty positions in other departments; the 75 remaining faculty accepted one of the special options offered for early retirement or buy-outs. As a result, the university reduced its former staff by 835 positions and shifted 68 faculty from 12-month to 9-month appointments without a lawsuit or serious lasting morale problems.

Major Issues Debated

It would seem that whenever any institution undergoes a major program review there are certain issues that will develop into major conflicts or debate. Although the particular details surrounding these central issues are not germane to all universities because of organizational, legal, and political differences, nevertheless, the general issues involved are relevant. Administrators should anticipate considerable debate on the following topics.

(1) Declaration of a Fiscal Crisis
In order to conduct program reviews that will curtail major programs and dislocate many permanent employees, most universities are obliged by their own by-laws to formally declare a fiscal exigency. This requires that the extent of the fiscal problem be well defined. Opponents of program review will then try to show that the assumptions behind the fiscal crisis are too pessimistic, or failing that, they will show that other options will better solve the fiscal problem.

(2) Defining "Programs"
Once it becomes clear that a faculty member's termination will largely result from his/her association with certain programs, a concerted effort will be made to generalize the definition of a program to comprise much larger clusters of activities, courses, and faculty. By so doing, it becomes much harder for administrators to partition the elements of a department and eliminate selected positions. This "all or nothing" strategy is seen as offering a strength by numbers.

(3) Criteria for Eliminating Programs
This issue offers the most intellectual latitude for difference of opinion. There are many characteristics to consider - - number of majors, extent of service to other programs, uniqueness of the program, enrollments, quality, outside funding attracted, service rendered to the public, number of tenured faculty, affirmative action considerations, . . . This debate was greatly muted at MSU by assigning the task of selecting programs to be terminated to a committee of faculty. The committee wisely refrained from explaining exactly how they would carry out this task and simply stated that they would consider all the relevant factors. If this task is assigned to an administrative office, particularly one such as institutional research that is data oriented, there would certainly be a major debate over how the information is to be used.

Type of Position	Action Required						
					Annual to Acad. Appt		
	Vacant	Retirement	Termination	Nonreappt	Vol.	Invol.	Total
Tenured Faculty	72	27	119		17	28	263
Temp. Sys. Faculty	15	2	36			4	57
Job Sec.	4		11		1		16
Staff w/o Job Sec.			4	1			5
Temporary Faculty	19	1	22	50	1	1	94
Temporary Staff	3	1	2	5		2	13
AP	11	3	40				54
CT	46		123	1	1		171
GA	11		27	78			116
Other	7		60	2			69
Labor	6		26		3		35
Total	194	34	470	137	23	35	893

FIGURE 9. SUMMARY OF STAFFING CHANGES DUE TO THE COORDINATED PROPOSAL

(4) Faculty Tenure
A debate will center on such questions as: "Can a tenured faculty member be terminated? If tenure is with the university rather than with a program or department, isn't the administration obliged to find another position within the university for an individual? Can tenured faculty be terminated in a given department as long as there are untenured faculty retained? What rights do the receiving units have in cases where a faculty member is transferred? Does a terminated faculty member have first priority for any suitable position openings in later years?"

Conclusions

The example served by MSU shows that program review can be effectively used to bring about a major reduction in the current operating budget and an even larger budget reduction from the long run perspective. The process can be enhanced by making some advance preparations and by anticipating certain inevitable conflicts. However, many issues, which in theory could and should be resolved in advance of a fiscal crisis, in practice seem to need the stimulus of an emergency to bring about any closure.

Advance Work:

- Ensure that the institution has clearly written statements regarding the declaration of a fiscal crisis, the meaning of faculty tenure, the definition of an academic program.
- Decide what data should be considered in assessing academic programs and then ensure that they are available.
- Develop a formal program review procedure from start to finish, together with a timetable.
- Devise, cost out, and write up suitable early retirement, 12-month to 10-month appointment change, and buy-out options for faculty.
- Set up a special out-placement office for a limited period of time during and after the program review.
- Freeze all new hiring as far in advance of program review as possible.

During the Review Process:

- Keep communications as open as possible. Allow administrative and faculty committees time to review and comment on drafts of all statements or proposed actions. Hold occasional public sessions to air particularly critical issues.
- The committee, office, or person conducting the program review and making the original selections of those to be eliminated must be

above all suspicions of vested interest. The charge to the committee and its general mode of procedure must be made known; however, it should not have its freedom of action hampered by too closely defining exactly what weights will be attached to what criteria.

- Administrators need to realize that they will be engaged in a process that at times will be extremely stressful. They must maintain a strong resolve to see the process through to an effective conclusion in the face of heated political opposition and delaying tactics. In addition, they must understand the emotions of those whose jobs are threatened and ensure that all terminations are handled as sensitively as possible.

- The emphasis should be placed on the long run savings to be made for, in many cases, the costs associated with special options for departing faculty may negate any immediate saving.

THE INTERNAL USES OF OUTPUT ANALYSIS: FACTORS INFLUENCING AND ATTITUDES ABOUT MACRO LEVEL OUTCOME ANALYSIS IN HIGHER EDUCATION

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The purposes of this paper are to discuss the use of output analysis and to present and analyse results obtained in several survey research projects conducted by this author and by several colleagues which relate to the uses of and attitudes about output analysis in the U.S. postsecondary institutions. The major focus will be upon those studies which relate primarily to attempts to improve institutions, rather than to those which relate primarily to retrenchment, reallocation of resources and the like. However, the results are applicable in important ways to the retrenchment, refocusing or cancellation of academic programs. The data will be interpreted in light of open systems theory and they will be related to the conditions called for in various theories of change.

Some Theoretical Considerations

If one considers the linear systems model of an organization and particularly the open system conceptualization most usefully described by Katz and Kahn (1966), the notion is attractive in that knowledge about organizational outputs could, at least theoretically, be used in light of stated institutional goals to make better decisions in the organization, to improve its processes, to alter its relationships with its environment and to enhance inputs. The possible uses of output information have been discussed greatly in the 1970's in the U.S. as resources have diminished, as competition among institutions has increased, and as the American self-regulation system has been criticized (Trout, 1978; Kells, 1976). Most recently, as institutions have become outspoken about intrusions in their autonomy by government and by guild-oriented program level accrediting agencies (Carnegie, 1982), interest in output analysis has grown. The relative balance between the use of "means" (process)-related evaluation measures as opposed to "ends" (output)-related measures has, of course, become a topic of considerable interest. Institutional leaders and evaluation experts, once quite wary of output analysis because of its technical inadequacies and political ramifications (Romney, Bogen and Micek, 1978) and because of the obvious insufficiencies of its use for comparative purposes because of the lack of controls which would permit statements about cause and effect relationships (Hartnett, 1974), are now much more interested in output analysis. They feel that an increased (not total) focus on results by all those who review effectiveness will decrease the prescriptive and intrusionary dimensions of reviewers (state officials, peer accreditors) who too often focus on the process dimensions of education. As they see it, the use of evaluation standards with arbitrary and often not predictively valid criterion levels can inappropriately alter the allocation of resources and power relationships in the institution.

So, the politically motivated desire to enhance the use of output information in the evaluation system has joined the previous arguments that it be used to improve the organization -- the latter stemming from open systems theory and the calls for reform of the self-regulation system (Kells, 1976; Andrews, 1978). *These desires have as yet largely been unfulfilled.* The use of outcomes analysis in U.S. self-assessment efforts is still embryonic (Kells and Kirkwood, 1978a). We will review some of the data about desire or inclination to use outcome analyses later in this paper and speculate about the years ahead.

The other theoretical construction which bears on this situation is change theory. Experience and studies of non-profit, service-oriented bureaucracies clearly indicate that without a set of strategies to enhance the likelihood of change, postsecondary professionals, even when faced with the conditions which might foster increased use of outcomes including strongly threatening external conditions, tend to ignore the signals (Lindquist, 1978; Dijkman and Savanije, 1983). Inertia is strong in organizations with complex goals, relatively little process or output data, shared and greatly delegated governance, delegated production function, a high proportion of professionally anarchic workers and non-interdependency of function. It is hard to manage and change such organizations. So change strategies are needed, and the works of Kurt Lewin (1947), Ronald Havelock (1971) and Jack Lindquist (1978) are helpful. Lewin argued that for change to occur the attitudes of the organization's professionals must be "unfrozen" and then "refrozen" after the change. Lindquist's adaptive development strategy calls for discovery of reality (what he calls the "performance gap"), for active facilitation of the change process, for linkages to new ideas and knowledge, for enhanced organizational health through social interaction, for political coalition building, for closeness of the proposed change to the norms of the organization, for psychological ownership through participation and for appropriate reward structures. Many of these change elements or strategies are directly related to the use of output information in an organization. Output analysis, that is knowledge of the extent to which the program is or is not (particularly the latter) achieving the stated intentions (institutional goals, program or course objectives), can be powerful fuel for an improvement-oriented process, and under certain circumstances a retrenchment-related planning process (Arns and Poland, 1980; Dijkman and Savanije, 1983). It can be used to "unfreeze" attitudes about the performance of the institution or program and to begin the process of discovery about needed changes.

Factors Apparently Related to Use of Output Data

To this observer, it seems reasonable to assume (in the absence of adequate data to support or refute such notions) that while systems theory and change theory provide convenient support for the notion of increased use of output information in higher or postsecondary education settings, certain conditions or variables affect the extent to which the institutions and the professionals who inhabit them will be inclined to collect and utilize such information. The conditions would seem to be as follows:

1. The Nature and Site of Power in the Educational System.
   Of considerable importance is the matter most effectively described by Clark and Youn (1976) -- the locus of most of the power in the system. For the U.S. this is the top of the individual organization; most power

is in the hands of the administrative officers and the board. For the traditional European system the ends of the spectrum (the state or federal government or ministry on the one end, and the faculty guild on the other) hold most of the power; and for the British system the group with the most power seems to be the faculty guild. This has tremendous implications for the use of output information. In the U.S. system, if the top administrators decide to collect and use it (which they are apparently now more inclined to do), it probably will happen. In the European situation, the faculty guild (which in all settings -- U.S., Europe, British and other -- has generally been philosophically and politically opposed to such matters) can perhaps counterbalance any interest on the part of such matters by the ministry or government. In the European, therefore, and of course the British situation where the guilds' power appears to be relatively the strongest, and where the input variable is more elite and campus managerial prerogatives weak, it is at least postulated that interest in the full range of learning and other output measures across the institution would be lower.

2. The Purpose of the Output Analysis.
   Although several writers have indicated that participatory program reviews are possible in times of possible retrenchment (Arns and Poland, 1978; Dijkman and Savanije, 1983), the use of detailed output analysis in such settings is probably far less likely than in less threatening, improvement-oriented self-assessments.

3. The Nature of the Student Input Variable.
   It would seem plausible to expect that likelihood of interest in output analysis would be in inverse proportion to the quality of the student input variable — for accountability reasons. The weaker the incoming characteristics, the more likely it is that questions will be raised about whether the students are learning.

4. The Purposes of the Institution.
   Similarly, it would seem that interest in output analysis would be greater for career programs and professional training where outcome measures are seen as more plausible and where the level of professional and technical practice by graduates is of concern than for liberal arts dimensions, and of less interest in research-oriented universities with their complex goals than in community colleges and vocational institutes. Some data to support this premise were collected by Kells and Kirkwood (1978a) and by Kells (1983a).

5. The Extent of Non-Traditional Approaches.
   Quite evident in the U.S. and quite understandably, although some say unfairly, there is high expectation that non-traditional institutions including campus-free settings testing model external degree programs, experiential learning efforts and distance learning present output evidence that learning occurs and that goals are achieved, rather than showing, say, that procedure "X" is used or "Y" number of books are in the library. Many of these institutions or programs have neither libraries or formal or traditional instructional programs.

6. Other Institutional Characteristics: Age and Size and Managerial Style.
   Finally, at least in the U.S., the older, the larger, and the more dictatorally led institutions are (in a system where an administrative

dictator can exist), the less likely it is that those institutions will systematically study and use outcome information. The size factor was confirmed to be related to use by Kells and Kirkwood (1978a).

All of the foregoing assumptions need substantial study, and the now more receptive climate in the U.S. has seen an increase in such studies over the last few years.

Data About Output Analysis in the U.S.

Several studies have been reported in the last five years in the U.S. about the conditions necessary for and general inclinations about and use of output or outcomes studies. Almost all of them have been conducted within the context of the American self-regulation system with all of its conceptual advantages and practical problems (Young, et al., 1983). In the U.S., institutions are expected to study themselves periodically as part of the institutional accreditation system (Kells, 1983) conducted by peers and as a complement to the usually more general and more basic institutional licensing process run by the states. It is within this self-study process that we find the "laboratory" to explore the use of output analysis. As stated earlier, despite more than a quarter century of experience with mandated self-study processes, the use of outcome analysis by institutions conducting them has been almost non-existent until recently and it is still a relatively small although growing activity.

As reported at the OECD meeting in Paris in 1978 (Kells and Kirkwood, 1978), the first major retrospective analysis of self-study processes (n=208 institutions) indicated several interesting things --

(a) that the only factors found to be related to perceived success of the self-study processes were the presence of internal motivation ("we must do this study to improve our institution, not because some outside agency or force call for it"), the presence of sympathy by and active leadership from the top leaders on campus (here the forces on administrative power in the U.S. is felt), and an appropriate design for the process (focus, sequence, use of human resources, staff help, etc.) in light of the institutional circumstances. No other factors, institutional or process-related seemed to be related to perceived success. These findings have been generally confirmed by others (Day, 1980, Casserly, 1983; and Harris, 1983).

The implication of the foregoing for output analysis would seem to be that managerial inclination, expertise of the staff (for design), and the nature of motivation might affect the use of output studies.

(b) The other finding of the 1978 studies was that there seemed to be a clear correlation between those institutions that did study outcome matters, particularly data about student learning and perception of their experience, and perceived satisfaction with the self-study (Kells and Kirkwood, 1978a).

A recent study by Elizabeth Armstrong in California (1983) concerning the use of outcome studies in the self-study processes of California institutions indicated that almost half of the institutions studied conducted at least some form of outcome study. Two general types of studies were noticed: those attempting to assess student achievement (learning), and those assessing student and alumni satisfaction with the experience they had at the institution (did the institution provide the intended atmosphere, conditions for learning, services and the like?). Both approaches seemed to produce useful results, and a range of approaches or procedures were used in the studies. She found that the outcome studies seemed to be most useful when related to the highest priority institutional goals, when internal advocacy was strong for the studies, when techniques "fit well" with the institutional style, when expertise was available and when all concerned felt rewarded by participating.

Sidney Micek, of Syracuse University, who also reported at the 1978 OECD meeting (Romney, Bogen and Micek, 1978), has continued his interest in outcome studies. He is interested in enhancing the use by faculty members of student outcomes information. He is seeking the factors which influence this. His early findings (Micek, 1983) indicate, as expected (when one considers change theory), that the extent of involvement of faculty members with the design of the outcome studies was related to the usefulness of the results -- as they perceived it their use in course or program planning, in understanding student needs and the like.

Finally, two studies concerning attitudes about the use of outcomes studies were conducted recently in the U.S. In the first, Andrews and his colleagues (1978) conducted a study of the opinions of 1,700 institutional leaders concerning the balance between "means" (process considerations) and "ends" (output measures) which should be used in the institutional evaluation processes (self-study, evaluation team work and evaluation standards) of the accreditation system. The results clearly indicate that there is widespread sympathy for increasing considerably the emphasis which is placed on "ends" (outcomes) measures.

Finally, in a recent study this researcher (Kells, 1983a) found very similar results in a study of attitudes of the accrediting board members of all thirteen institutional accrediting boards in the U.S. In addition, some support was found for the presumption indicated above concerning institutions and their professionals which offer primarily career training. The members of the national institutional boards which deal primarily with career institutions and whose members are career training professionals clearly favored the highest emphasis on outcomes information in the accreditation procedures.

Some Analysis

It is difficult to know whether the trend of greater inclination to use of output measures of learning, research, services or other general productivity measures, which seems to be occurring in the U.S., will occur in European institutions and systems. It is also difficult to know how much of the U.S. inclination will be translated into widespread use. Theories about change, so useful in planning and assessment processes, seem to indicate that the use of dramatic performance data might assist in the early stages of a retrenchment process (to "unfreeze" attitudes). Whether assessment and planning processes not related to retrenchment will increasingly use output information in post-secondary systems which are not as egalitarian and heavily administered at the local (institutional) level as in the U.S. remains to be seen. These are some of the questions which this researcher hopes to pursue in the years ahead.

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RELATIONS BETWEEN AGE, MOBILITY AND PRODUCTIVITY OF ACADEMIC RESEARCHERS

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Introduction

The universities are entering a new era. The time of growing budgets is over; they are now facing real budget cuts instead.

What are the consequences for academic research, not only in quantitative but especially in qualitative terms? In this respect, the decline in mobility among the research staff due to - or at least enforced by - a lack of vacancies in the laboratories and institutions is worrying. This is generally believed to have a negative impact on research productivity for two reasons:

1) The remaining researchers miss the stimuli coming from switches from one place or research field to another ('to rest is to rust').

2) There is an insufficient influx of young researchers; in consequence the average age of researchers is rising and this too means a lower productivity because, as conventional wisdom says, productivity declines with age.

Is all of this true? If so, which kind of mobility should then be encouraged: should we make people change jobs, change research fields, or leave research? At which age should one change? Are there special groups of academics for whom mobility is particularly (un-)favourable? This paper deals with these questions, which are of utmost importance from a science policy point of view.

The Scope of this Study

Our study looks at:

- the effect of age on the productivity of the researchers;
- the effect of a job-switch (not coupled with a change in research field) on the productivity of the researcher;
- the effect of a research field switch on the productivity of the researcher.

The empirical analysis is based on data covering the entire research careers of 435 researchers from the departments of physics, chemistry and economics at the Dutch universities. The data were collected by means of a written survey.

The three effects have to be analyzed simultaneously because age and mobility may be interdependent. Our results are based on multiple-regression analysis of the data. This method allows one to study the linear relationship between a set of predictor variables and a dependent variable while taking into account the interrelationships among the predictor variables. The basic goal of multiple regression is to produce a linear combination of predictor variables which will correlate as highly as possible with the dependent variable. This linear combination can then be used to 'predict' values of the dependent variable. In our case the dependent variable is the productivity of a researcher in year t, t running from the start of the research career (which is different for each researcher) till 1980 (the last year covered by our data). Age and mobility are among the predictor variables. Besides these two, some other predictor variables are also included in the regression equation like: time available for research, the type of research (fundamental or applied), the kind of involvement (supervising or doing the more tedious work). These variables are taken into account because they may play an intermediary role: they may be influenced by age and/or mobility and by themselves influence the productivity. If so, they may cause, if they are not explicitly included as predictor variables, a non-sense correlation between productivity and age or mobility.

The next section deals with the relation between age and productivity. The relation between mobility and productivity will be described in the subsequent section. Special attention will be given to causality in the relations.

Age and Productivity

Much attention has been given in the literature to the relation between age and productivity. The general conclusion seems to be that beyond a certain age productivity declines. However, the analysis on which this conclusion is based generally tends to show serious deficiencies. This casts doubts on their empirical results.

The method of analysis

These studies are usually based on one of the following two approaches:

- a cross section analysis;
- a longitudinal section analysis.

A cross section analysis compares the productivity at a specific time-period of researchers who differ in age. In such an analysis one ignores, however, the possibility that productivity differences may not be due to differences in age. Other factors may be important. Apart from factors like 'time available for research' etc. (the so called intermediary variables mentioned before) one can also think of more structural differences between the age groups. Harmon's data (see Harmon, 1965) suggest, for example, that particularly the best researchers in a cohort stay in research, while the other ones leave as time passes. If this is true - but also if the opposite is true - the different age groups are not comparable: the cohorts differ in quality not because of age differences but because of the just mentioned selection process. In other words, one needs to take into account - at least one cannot ignore - the possibility of a cohort effect.

Longitudinal section analysis restricts itself to time series data of a fixed group of researchers. Here, there are two objections. In the first place such an analysis is only useful when it concerns a group that has been in reseach for a long time (otherwise one cannot trace the age effect). Given the selection mechanism mentioned before, such a group might well be a specific selection from the original cohort. It is not clear that the result based on such a selected group can be generalized. If the best researchers stay in research - as Harmon's study indicates - the study of Price, Thomson and Dalton (1975) suggests that this generalization cannot be made. They ascertain (among engineers) a different age effect for engineers who differ in quality.

The second problem with a longitudinal analysis concerns the productivity-index used in the relevant studies. Those indices are usually based on numbers of publications or citations. These numbers, however, may be inflated through time because of changes in publishing and citing habits. In a recent article in Science, W.J. Broad (1981) writes in this regard about 'the publishing game: getting more for less' and 'squeezing more papers out of a reseach project'. Our data also show that the number of publications per researcher rises through time (see Figure 1). In a longitudinal analysis one cannot separate age and period effects; one usually ascribes the combined effect solely to the age variable.

The conclusion is that both methods - the longitudinal and the cross section - are not adequate: they cannot disentangle either the cohort and age effects or the period and age effects (see Figure 2). Another approach is needed. The only way out seems to be an approach based on a combination of cross section and longitudinal data (all the elements of the matrix). But even with research along both these lines one cannot disentangle the three effects either. This is due to the structural dependence between the variables age (A), period (P) and cohort (C) (nl. A=P-C). This problem can only be solved if (at least) one assumption regarding these effects is introduced (see Fienberg and Mason, 1979); for example the assumption that there is no difference in productivity due to age between age groups 1 and 2. Such an assumption, however, will determine the final empirical results: each assumption giving different results. Using a cross section analysis one (tacitly) assumes the cohort effect to be zero; with a longitudinal analysis one assumes the period effect to be zero. These assumptions can be made of course, but one has to be aware of the implications for the final results.

What are the implications? Is it possible to determine to what extent the final estimates are truly based on empirical grounds and what are the consequences of the (arbitrary) assumptions needed to arrive at the results? It can be proven that only the linear trend in the estimated relation is unidentified. The (arbitrary) assumption needed to solve the model sets this trend. Such a trend has therefore no absolute meaning; it can be set arbitrarily depending on the assumption made. This means that the estimated age-productivity curve can only be interpreted as a relation between age and the mutation in productivity, not as a relation between age and productivity level.

Empirical results from our analyses

Figure 3 shows our estimation of the relationship between age and productivity. This estimation is the result of the multiple regression analysis on our data, as discussed before, based on the assumption that the age effect is equal for three year intervals. The figure shows the partial regression

FIGURE 1

Average Number of Publications per Researcher per Year

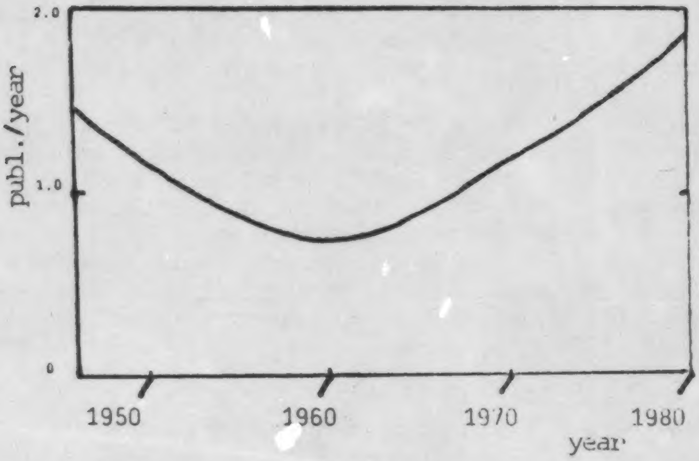


FIGURE 2

Matrix Showing the Cohort, the Period and the Age Effects

The Elements are the Average Number of Publications
per Researcher per Cohort and Period

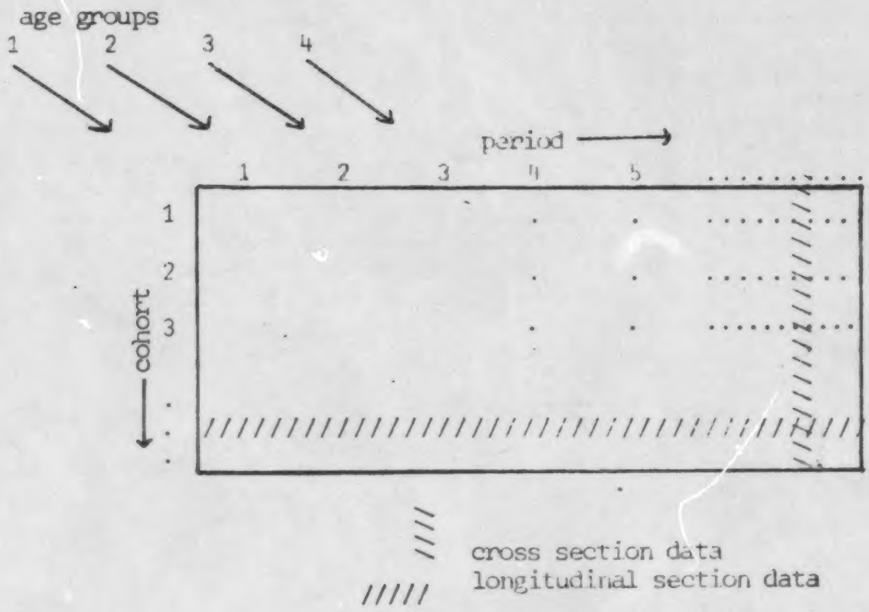
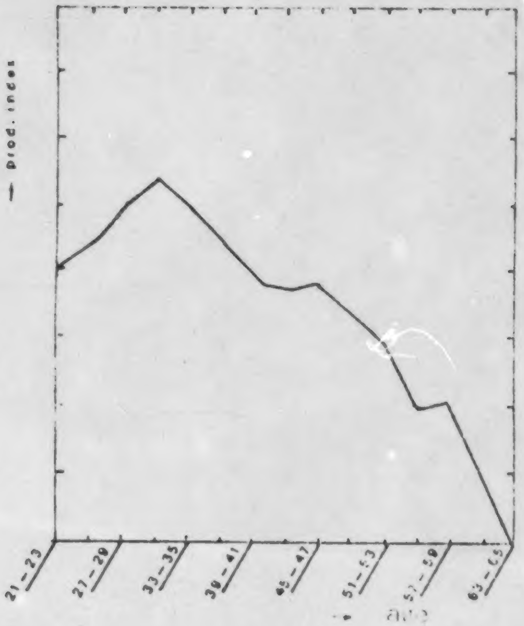

age groups
1
2
3
4
period
1
2
3
4
5
cohort
1
2
3
cross section data
longitudinal section data

FIGURE 3

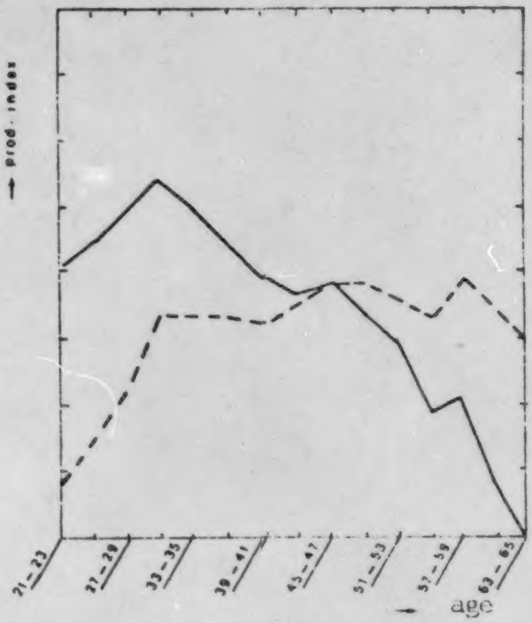
The Estimated Relation Between Age and Productivity



Legend: The productivity index (which is based on the number of publications of the researcher) is related to several predictor variables by means of multiple regression analysis. The curve shows the regression coefficients of the predictor variables related to age (it shows the relation between age and productivity holding the other predictor variables constant). The linear trend in the curve is arbitrary. This means that the curve only gives information about the effect of age on the mutations in the productivity not in the productivity level as such (see text).

FIGURE 4

The Relations between Age and Productivity Estimated by Means of Two Different Models



——— ESTIMATION BASED ON THE ORIGINAL MODEL

– – – – ESTIMATION BASED ON A SLIGHTLY MODIFIED VERSION OF THE ORIGINAL MODEL
(Some variables are deleted, viz. the dummy-variables regarding the disciplines and some variables regarding mobility)

Legend: See Figure 3.

coefficients of the variables relating to age; these coefficients give the relation between age and productivity when the other predictor variables are held constant.

The variable Age appears to be a significant predictor variable for the productivity of the researcher. Because of the introduction of the intermediary variables as predictors in the regression equation (see above), this significant correlation between age and productivity can be interpreted as a direct relation (no non-sense correlation) between both variables. Since it is not plausible that Age is determined by Productivity, the conclusion is that the production level is influenced by the age of the reseacher.

From Figure 3 one cannot conclude that productivity drops after the age of 30. One can only conclude that after the age of 30 productivity grows less rapidly than before (the first derivative is decreasing). It may well be that the productivity level is still rising after the age of 30. This cannot be verified on empirical grounds.

In order to show how sensitive the linear trend in the estimate is for the kind of model specification, see Figure 4. It is striking to see how the linear trend switches with a modification of the model; however, the second order effects do not change significantly. The conclusion is still the same: a slowing acceleration in the productivity after the age of about 30.

Looking at the three disciplines separately it appears that among economists productivity is not influenced by age. Among physicists and chemists age does have a significant impact on productivity; this impact is about the same for both of these disciplines (figures not shown).

Is there a difference in the age-effect between productive and less productive researchers? According to our analysis there is. It appears (see Figure 5) that for the most productive researchers the bend in the age curve is at an earlier age (about 28) than for the less productive researchers (bend at about 34). The last mentioned group shows a relative come-back at the age of about 40 (the derivative of the curve increases). This is comparable with the camel-shaped curves resulting from earlier studies (e.g. Pelze and Andrews, 1966). The main difference is, of course, in the interpretation of the results.

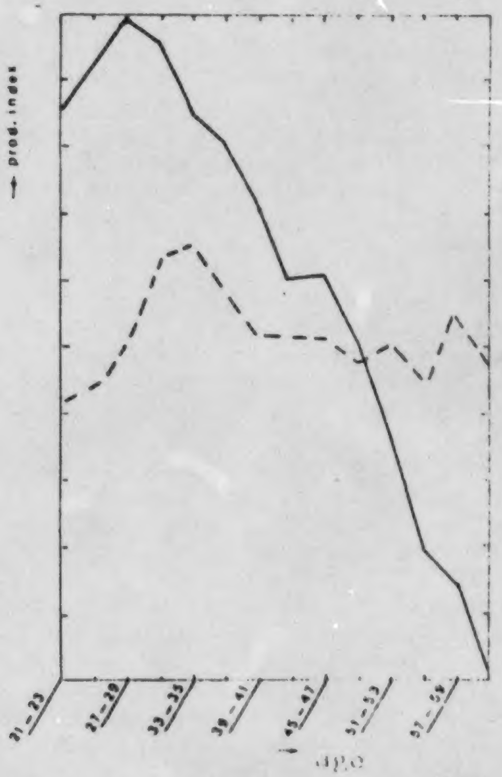
In concluding this section we would like to stress the point that the earlier empirical studies addressing the question of the relation between age and productivity have disregarded the period and cohort effects. Because of these shortcomings they are unaware of the limitations of their results. It appears to be impossible to make statements about the effect of age on the level of productivity which are based solely on empirical grounds. The only testable statements are those about the effect of age on the acceleration or deceleration of the productivity of the researcher.

Mobility and Productivity

Does mobility stimulate productivity? This is generally believed to be so. Such an opinion is based mainly on what one sees: one ascertains that, generally speaking, the researchers who show the highest mobility are the most

FIGURE 5

The Relation between Age and Productivity for Highly Productive and Less Productive Researchers



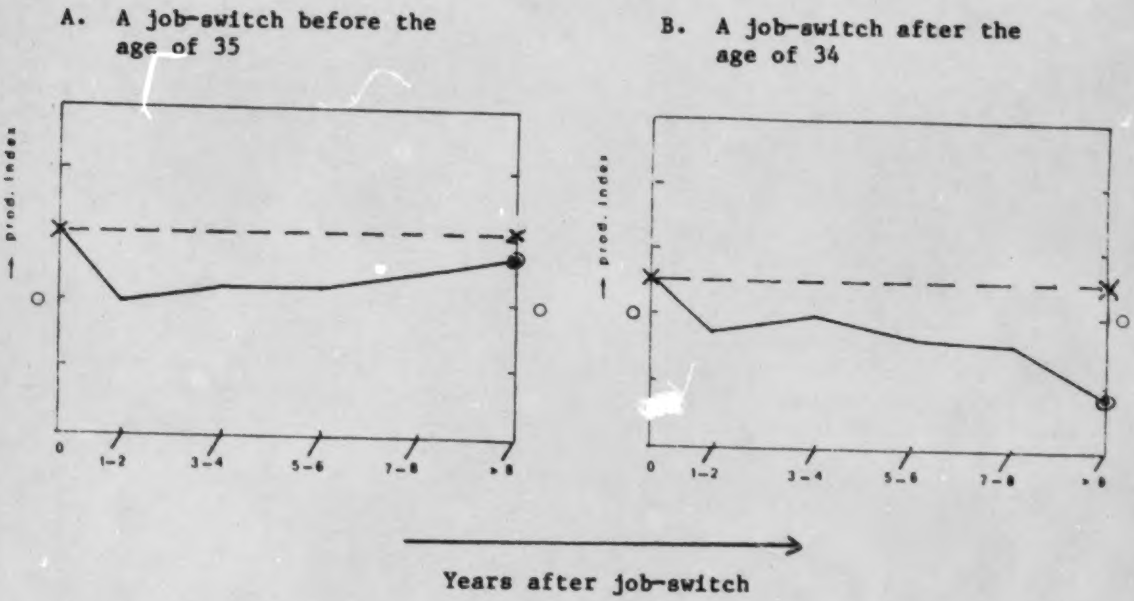
——————— The top 1/3 most productive researchers

– – – – – The other 2/3 of the researchers

Legend: See Figure 3.

FIGURE 6

The Estimated Relation Between Productivity and the Time Since the Last Job-Switch



A. A job-switch before the age of 35

B. A job-switch after the age of 34

Legend: The productivity index (which is based on the number of publications of the researcher) is related to several predictor variables by means of multiple regression analysis. The curve gives the regression coefficients of the predictor variables related to a job-switch; an encircled point means that the coefficient differs significantly from zero (t-value > 2). In fact the curve shows the relation between productivity and 'years after a job-switch' holding the other predictor variables constant; the zero-line symbolizes the productivity of the average researcher under the same conditions except that in this case the variable 'years after a job-switch' is zero.
The X-point indicates to what extent the natural productivity of the switchers is above average.

productive ones. But the question is: what is influenced by what? Is productivity really stimulated by mobility or does the productivity only determine the mobility?

Method of analysis

Our study tried to answer these questions by tracing the effect of a job- and/or field-switch on the productivity of the researcher. This was done by means of a regression analysis as mentioned before; the productivity of a researcher in year t is the dependent variable and the number of years between t and the last switch is the predictor variable. Such an analysis calculates the (partial) correlation between productivity and the time since the last switch. However, a significant correlation may be a necessary but is certainly not a sufficient condition for accepting the hypothesis that a switch influences productivity. Alternative explanations are possible, viz..

1) The correlation is a non-sense one because it is caused by other variables, not included in the regression equation, which are related to productivity and to the 'years after a switch' (the so called intermediary variables);

2) Productivity determines mobility.

The first of these alternative explanations is a not very plausible one because the variables most likely to fulfill such an intermediary role are already included in the regression equation, (these are: the age of the researcher, time, time available for research, the type of research, the kind of involvement).

The second alternative explanation for a correlation between productivity and mobility is that the productivity determines the mobility. This certainly is a plausible explanation because it is conceivable that highly productive and less productive researchers differ by nature in mobility behaviour. If so, this means that a correlation (partially) reflects the differences in natural productivity level (the productivity free from influences of age, mobility, etc.) between the ones who show mobility and the ones who don't. However, this part of the correlation can be determined by comparing the actual productivity of the switchers before the switch (so the switch has had no influence yet) with their predicted productivity according to the regression line (calculated on the base of their age, the time available for research, etc.). The difference between their actual and predicted productivity indicates to what extent the productivity of the switchers is 'above average', in other words to what extent productivity determines productivity. If the estimated correlation between productivity and mobility is stronger than the difference just mentioned, then the conclusion can be drawn that mobility influences productivity.

Empirical results

Figure 6 shows the estimated relation between the productivity of a researcher and the number of years after a job-switch not coupled with a change in research field. As mentioned before, the estimate is based on a regression analysis with several predictor variables for productivity. The figure shows the partial regression coefficients of the (dummy-)variables related to 'years after a switch'; these coefficients give the relation between 'years after a switch' and productivity when the other predictor variables are held constant. In order to determine if the relation depends on the age at the time of switching, a distinction was made between switches in the early years of careers and later.

The X-points in the figures indicate to what extent the natural productivity of the switcher is above (or below) average (it is the difference between the actual and the predicted productivity of the switchers in the year of and the two years before the switch).

From these figures the following conclusions can be drawn:

- The researchers who change jobs (the switchers) are on the average the more productive ones: their natural productivity (X-point) is above average (the zero base line).
- The productivity of the switchers drops after the switch; it takes quite a while to catch up again. There is no indication that the final effect is a boost in their publication activity (the curve never comes above the (X-line). On the contrary, notably for the ones who switch later in their careers, the effect seems to be negative (the curve in 6B ends significantly below zero).

Further analyses shows that (the figures are not included):

- This general picture also holds when the productivity index is not based on number of publications but on number of citations received.
- There are no marked differences between the three disciplines and between highly productive and less productive researchers.

The general conclusion is that there is no empirical justification for the hypothesis that a change in job stimulates production.

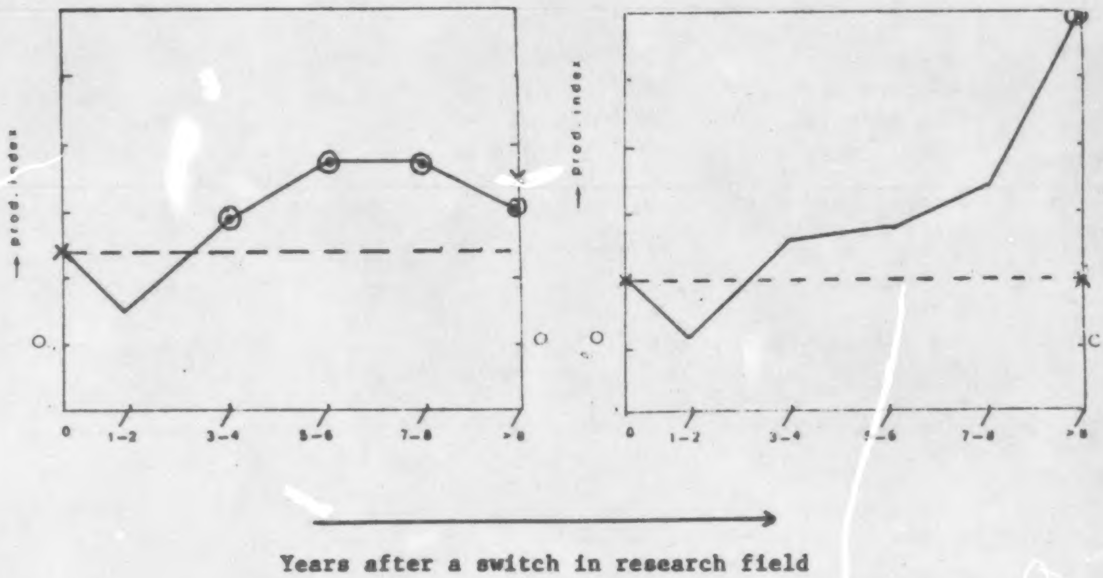
Let us now turn to field mobility. Figure 7 shows the estimated relation between the productivity of a researcher at a certain time and the number of years since the last switch in research field. The following conclusions can be drawn.

- Here too, it appears that the switchers are characterized by a relative high productivity level (the X-point is above the zero base line which indicates that their natural productivity is above average).
- After a switch the productivity drops, but after a few years the productivity lies above the level that one should have reached without such a switch (their natural level indicated by the X-line). In the long run, one falls back to one's natural publication level (see Figure 7A). When productivity is based on the number of citations received (a measure for the impact of the published research on the scientific community), the effect in the long run appears to be positive (see Figure 7B).

Further analyses show that (figures are not included):

FIGURE 7

The Estimated Relation Between Productivity and the Time Since the Last Switch in Research-Field



A. Productivity based on number of publications

B. Productivity based on number of times publications are cited in the three years after publication

Legend: See Figure 6, read 'field-switch' instead of 'job-switch'.

- The age at which one changes research fields does not influence the relation between productivity and 'years after a switch'.

- Looking at the three disciplines separately, it turns out that field mobility has a negative effect for economists and a highly positive effect on the productivity of chemists.

- Differentiating between highly productive and the less productive researchers shows that especially the highly productive researchers benefit from a switch in research field.

The general conclusion is that our results indicate that a change in research field works out positively in the sense that the impact of the work of the researcher who switches is increased by the switch.

Discussion

It is generally believed that an increase of the mobility of researchers will stimulate the research. The attention in Dutch research policy is to a large extent focussed on increasing job-mobility. In this respect a distinction is made between internal and external mobility: internal mobility relates to changing jobs but staying in research, while external mobility relates to leaving research. The first kind of mobility is generally believed to be beneficial because of the stimulus coming from a new environment, new colleagues and such-like. External mobility is propagated mainly because of the belief that research productivity declines with the age of the researcher.

Our analysis queries some of these arguments. For example there appears to be no solid empirical basis for the hypothesis of productivity declining with age. Our analysis also shows that changing jobs per se does not stimulate the productivity of the researcher.

Beside these query-marks, it appears to be very difficult in practice to stimulate job-mobility due to the established rules concerning job-security and the bad situation of the labor-market in general.

It seems to us that in research policy not enough attention is paid to encouraging field-mobility. Our analysis shows that changing research fields especially stimulates the researcher. Because field-mobility does not necessarily have to be coupled with a job-switch, there are less formal obstacles for this kind of mobility. On the other hand, from the experiences within the large industrial laboratories one can learn that researchers do not easily change research-fields. There are several psychological barriers. Much persuasive power of the management is needed to convince a researcher of the need to change reseach-fields. General measures imposed by institutions on the national government are insufficient. What is needed is a good research management. In this point the universities seem to be lacking.

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TRANSFORMING TENURE:
AN APPRAISAL OF MODIFICATIONS AND ALTERNATIVES TO TRADITIONAL TENURE AT U.S. COLLEGES AND UNIVERSITIES

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Alternatives to Traditional Tenure

In light of the high rate of tenure in U.S. public universities, several institutions and state systems of higher education have begun to consider alternatives to tenure. Alternatives put forth range from eliminating tenure altogether (as at the University of California and Stanford) to creating non-tenure tracks for some newly appointed faculty. Furthermore, these developments are not limited to the United States. A nationally appointed commission in Great Britain has proposed converting British academics from tenured positions to civil service positions. In Canada, the government in British Columbia is recommending abolishing tenure for all higher education faculty in the province. In the United States, the Governor of Colorado has made a similar proposal. Other proposals call for "detenuring" faculty at certain universities based on annual performance evaluations. The American Council on Education is conducting a conference this month on post-tenure evaluation.

Less drastic alternatives are the subject of a recent study by Chait and Ford, Beyond Traditional Tenure. These options are: term contracts, non-tenure tracks, extended probationary periods, suspension of the "up-or-out rule", and quotas on tenure. Implementation of these options has been thus far confined mostly to the small U.S. institutions, which grant only the baccalaureate degree. The results of their experimentations, however, provide extremely useful insights for the larger universities which are facing increasingly high tenure rates and seek solutions short of abolishing the traditional system altogether.

Term Contracts

Perhaps the most frequent substitution for lifelong tenure is the term contract. A term contract is a limited appointment for a specific length of time. The use of term contracts is not particularly novel. In most colleges and universities, probationary faculty receive a one-year or two-year appointment until they are awarded tenure. But the use of term contracts to replace traditional tenure is particularly novel and the experiences of institutions using it to the exclusion of tenure are especially illustrative for all of higher education in general.

To date, only a handful of schools have installed term contracts. Those that have tend to be small in size, single-purpose, experimental, and recently founded.

One of the first colleges to institute term contracts in lieu of tenure was Hampshire College in Amherst, Massachusetts, founded in 1970 as a highly experimental, loosely structured four-year college. Hampshire eschewed tenure because of its desire to promote experimentation and avoid an entrenched cadre of permanent academics. At Hampshire, all initial faculty appointments are for fixed three-year terms. After three years, a faculty member may seek reappointment for four more years. All subsequent renewals are for ten-year terms. The ten-year contracts were adopted in 1980 to provide greater job security to the senior faculty and to reduce the avalanche of yearly faculty evaluations required under the limited four-year contracts.

Another variation of the term contract is at the University of Texas at Permian Basin. This is an upper-division school, which grants graduate degrees, primarily the master's degree. At this university, newly appointed assistant professors receive a fixed seven-year contract. Upon completion of that contract, they may be terminated (by being issued a one-year nonrenewable contract) or awarded "term tenure". Term tenure contracts are for seven-year periods, indefinitely renewable, with performance reviews scheduled every sixth year. Less than 50% of the faculty enjoy term tenure.

Findings

As the experiences of these experimental colleges make clear, the disadvantages of term contracts far outweigh the advantages. First of all, term contract systems require excessive amounts of time for personnel evaluation. Even at these small institutions, with total full-time faculties of less than 75, faculty are overburdened by the sheer number of evaluations in which they must participate as peer reviewers. At a large university, such as Ohio State or Penn State or Illinois, the annual caseloads of faculty evaluation would require over 500 personnel decisions each year. In this case, the cure (term contracts) is worse than the disease (tenure).

Secondly, not only are fixed term contracts impractical for institutions with more than 150 full-time faculty, they do not accomplish the basic purpose that they were intended to carry out: provide flexibility in staffing through a planned turnover rate. For example, at Hampshire College and Evergreen State (a small four-year state college in Washington) the rate of renewal of annual contracts is about 90%. This high renewal rate stems from three principal factors:

1. The difficulty in evaluating so-called "innovative" instructional performance such as team-teaching and other nuances which are individually negotiated by each professor.

2. Correspondingly, these institutions have been unable to identify the locus of responsibility for making critical decisions about faculty performance. Administrators have been reluctant to issue negative personnel evaluations because they feel that faculty development is a shared burden.

3. The low mobility of faculty as a result of changing market conditions for higher education nationally. Like faculty elsewhere, faculty at these three institutions are unable to transfer to other colleges.

4. The short-term risk phenomenon tends to perpetuate long-term commitments. Decision-makers are inclined to offer one more short term contract to even the most marginal of faculty because the finality of a lifelong tenure commitment is not at stake.

Perhaps, the only potential advantage of term contracts as they are presently implemented is the flexibility that they give an institution to retrench faculty because of financial emergencies or program redundancies. Administrators would not be obliged to renew term contract appointments in such cases. However, the critical issue is not the term contract but the institution's retrenchment or layoff policy. If the latter is as sufficiently broad and flexible as that in place at Evergreen State, the administration has sufficient latitude in making layoff decisions on the bases of academic program and overall institutional needs.

Furthermore, because of the availability of evaluations and performance reviews of faculty at frequent intervals, term contract systems may in fact promote more systematic and equitable retrenchment decisions than would traditional systems. On balance, howver, term contracts offer few if any practical alternatives to the present tenure system and considerable revision would have to occur before institutions in the mainstream of U.S. higher education would adopt them to replace the tenure system.

Non-Tenure Tracks

Non-tenure tracks are used by several U.S. colleges and universities as alternatives to establishing tenure quotas or abolishing tenure entirely. They allow management a certain elasticity in keeping tenure rates constant while at the same time permitting optimum turnover of personnel at the lower ranks. There are three principal types of non-tenure tracks and each is based on the renewability and duration of the appointment. Each type is described below including examples of institutions employing the type.

1. Indefinitely renewable appointments for one or more years: Pennsylvania State University, Colorado School of Mines, University of Wisconsin at Oshkosh.

2. Limited renewable appointments for one or more years after a three- to seven-year term expires: Rutgers University, Oklahoma State University, Hartwick College.

3. Non-renewable appointments terminating automatically after two to three years: Temple University, University of Wisconsin System.

There is limited information available concerning both the number of institutions using non-tenure tracks and the amount of faculty within institutions serving on them. If the above institutions are representative of the larger population, it appears that indefinitely renewable appointments provide the institution with some flexibility in controlling tenure rates. Over the three-year period, Penn State and Wisconsin-Oshkosh have limited the growth of tenure with marginal reductions in the total full-time staff. The limited renewable type of non-tenure (Type II) features mixed results, with Rutgers experiencing a 10% rise in the percentage of tenured faculty to the total number of full-time faculty and Oklahoma state experiencing a decline in that percentage of 2%. In both institutions, changes in tenure are university related to the changes in full-time faculty. The one university representing Type III illustrates the same pattern.

Table 1

Percentage Changes in Tenure and Full-Time Faculty
For Institutions With Non-Tenured Tracks by Type, 1979-80 to 1982-83

Indefinitely Renewable Appointments	Change in Tenure %	Change in % of Full-Time Faculty
Type I		
Penn State University	0	-1
Wisconsin-Oshkosh	-18	-2
Colorado School of Mines	N/A	10
Type II		
Rutgers	10	-3
Oklahoma State	-2	5
Hartwick	N/A	-2
Type III		
Temple	7	-5
U. of Wisconsin System	N/A	N/A

Source: This and all succeeding data appearing in the tables were compiled by the National Center for Educational Statistics as derived from HEGIS (NCFS Form 2300-3).

It is instructive to consider in some depth the means by which the University of Wisconsin at Oshkosh has accomplished a highly significant reduction in tenure. According to Chait and Ford, any academic departments at Oshkosh exceeding 70% tenured must place all new faculty in non-tenure positions (pp. 78-79). These faculty serve on fixed-term, one-year contracts, which may be renewed for six years thereafter. Oshkosh faculty may also be transferred from a non-tenure to a tenure track. Moreover, probationary tenure-tract faculty can switch to non-tenure positions. Changes in the number of faculty in each rank during three years are presented in Table 2.

It is interesting to note the net decrease in the number of Associate Professors and the increase in the number of full professors in 1982-83. Thus, Oshkosh has used non-tenure tracks primarily to prevent high tenure rates in the Associate Professor ranks. It is of course not possible to infer from the data whether the institution has also released significant numbers of faculty at the lower ranks.

Table 2

Number of Faculty by Rank at
University of Wisconsin-Oshkosh
1979-80 to 1982-83

Year	# in Ranks Prof.	Assoc.	Assist.	Inst.	Total # of Full-Time Fac.	# Tenured
82-83	151	122	100	32	405	278 (69%)
79-80	126	145	104	36	411	340 (83%)

Another interesting variation of the non-tenure track theme is illustrated by Webster College in St. Louis, Missouri. According to Chait and Ford, Webster restricts tenure to one-third of its faculty. All newly appointed faculty must select (after two years) either a tenure or non-tenure track. Those electing the latter are rewarded with generous professional leave benefits as compensation for the lack of job security. Table 3 exhibits the turnover in faculty ranks accompanying this voluntary selection system.

Table 3

Number of Faculty by Rank at Webster College
1979-80 to 1982-83

Year	# in Ranks Prof.	Assoc.	Assist.	Inst.	Total # of Full-Time Fac.	# Tenured
82-83	18	15	28	5	66	17 (26%)
79-80	16	23	26	4	69	21 (30%)

In less significant but in similar fashion to Oshkosh, Webster has effectd a decrease in tenure to a level (26%) well below the desired maximum of 33%. This has been accomplished primarily by reducing the number of associate professors and replacing tenured faculty with non-tenure track personnel.

Lastly, Coe College in Cedar Rapids, Iowa uses non-tenure positions for a maximum of 10% of the faculty. Usually the tenure-ineligible positions are used for new appointments in academic departments with low student demand and/or with high tenure density. The effects of this practice on the faculty ranks and the institutional tenure rate are presented in Table 4.

Probably because of the low number of faculty in non-tenure positions, Coe College has experienced increases consistently across rank and tenured faculty. The present rate of 58% is not, however, excessively high, even though it has risen substantially in three years.

Table 4

Number of Faculty by Rank at Coe College
1979-80 to 1982-83

Year	Prof.	# in Ranks Assoc.	Assist.	Inst.	Total # of Full-Time Fac.	# Tenured
82-83	20	25	22	10	77	45 (58%)
79-80	18	20	28	9	75	36 (48%)

Findings

As a version of term appointments, non-tenure tracks provide more strategic advantages compared to term contract systems. First of all, the non-tenure tracks are limited to a certain segment or percentage level of the faculty and thus do not preclude tenure or require an onerous number of personnel evaluations annually. More specifically, depending on the type of renewability, the number of reappointment decisions is usually manageable.

Secondly, the non-tenure system affords management considerable flexibility to restrict personnel commitments during an era of financial austerity and enrollment declines. As the cases of Wisconsin-Oshkosh, Webster, and Pennsylvania State University demonstrate, a university can significantly reduce its tenure density by limiting or reducing the number of faculty in the associate professor rank. At Pennsylvania State, for example, the number of associate professors has decreased from 412 in 1979-80 to 387 in 1982-83. At the same time, the number of assistant professors has decreased by 23. The number of full professors has increased by 15 and the number of instructors has increased by 22. In the case of the latter, the unviersity has placed all of these newly appointed faculty in the non-tenure stream.

Thus, for some institutions which use the system judiciously, tenure-inelegible slots can provide substantial elasticity in adjusting proportions of faculty by rank and in managing tenure rates.

The negative aspects to non-tenure tracks concern the rate of renewal of faculty appointments, the criteria by which positions and individuals are selected for tenure-elegibility, and the consequences of the practice for academic freedom. With respect to renewal rates, Chait and Ford found that non-tenure contracts are routinely renewed at colleges such as Webster and Coe Colleges (p. 74). There is a distinct tendency therefore to treat non-tenure positions as tenure positions by allowing faculty to continue indefinitely in the non-tenure stream. Compounding the problem is the option of equivocation (at such institutions as Wisconsin-Oshkosh) allowing for "switching tracks" back and forth from tenure to non-tenure tracks. Thus, the critical variable in examining the experiences of institutions that have instituted non-tenure tracks is the fluctuation in the number of total full-time faculty. Only Wisconsin-Oshkosh evidences a substantial reduction in full-time faculty; several others have had net increases in full-time faculty or have had marginal decreases which may be the consequence of natural attrition.

Another potential disadvantage of non-tenure streams is the basis upon which the appointments are made. As Chait and Ford discover, ". . . tenure-ineligible appointments are very often made for political or administrative rather than for curricular reasons. At Coe, for example, many non-tenure-track appointments serve foremost to suppress tenure levels and thereby to placate trustees" (p. 81). The issue rests on whether non-tenure appointments should be made in core disciplines or whether they should be reserved only for those at the periphery. In either case, sound curriculum planning should accompany the designation of non-tenure positions, otherwise the institution sacrifices long-term effectiveness for short-term expediency.

A third important consideration is the relationship of academic freedom to non-tenure tracks. The American Association of University Professors (A.A.U.P.) denounced the use of non-tenure tracks when they are used solely as a means to improve institutioanl efficiency. While sympathetic to their use to meet temporary institutional needs, the A.A.U.P. condemned non-tenure tracks for faculty who teach basic courses on the grounds of academic freedom. "The protection of academic freedom must take precedence over the claimed advantages of increased flexibility . . . The increase in flexibility which can be bought by the creation of a second-class faculty status is neither so great or so immediate as first appears" (AAUP Bulletin). The A.A.U.P. rightly insists that core faculty are of sufficient importance to the university to warrant placing them on probationary, tenure-track appointments. The Association further claims that only tenure-track positions protect academic freedom. The potential for arbitrary and capricious treatment of non-tenure track faculty is considerable in the mind of the Association and the dilemna faced by institutions experimenting with tenure-ineligible appointments is to decide the extent to which they wish to offer safeguards and job security to their temporary staff, short of making these positions de facto tenured.

In summary, non-tenure tracks may be a short-term panacea with limited dividends for the future direction and development of the institution.

Extending the Probationary Period

Faced with high tenure densities, losses of enrollment, and austere financial conditions, some U.S. universities have extended the probationary period beyond the traditional seven-year limit. Presently, the average length of time between initial faculty appointment and the granting of tenure is 5.7 years at public universities and 6.1 years at private universities (F. Atelsek and I. Gomberg). However, the average trial period is projected to increase slightly over the next five years, and some institutions such as Columbia, Princeton, and the Harvard Business School have already extended the probationary period to as long as 11 years. To obtain a better understanding of the pros and cons of this alternative, the experiences of two universities, as studied by Chait and Ford, are discussed below.

The University of Rochester (New York State), in order to provide greater staffing flexibility, established in 1972 two kinds of tenure: "unlimited tenure" and "limited tenure". "Unlimited tenure" bestows the same rights and privileges as does traditional tenure. "Limited tenure" prescribes a fixed time period for appointment at each faculty rank. For example, at Rochester an assistant professor may serve in that rank for a maximum trial period of 11

Table 5

Numbers of Full-Time Faculty by Rank and Tenure Rates for Institutions with Extended Probationary Periods

Institution	1979-80 # of Faculty						1982-83 # of Faculty					
	Prof.	Assoc.	Asst.	Inst.	Total	% Tenured	Prof.	Assoc.	Asst.	Inst.	Total	% Tenured
Rochester	203	129	139	64	535	53	208	140	151	58	557	53
U. Georgia	425	402	434	116	1377	57	463	436	378	91	1368	64
Georgia Tech	242	160	144	-	546	65	231	167	124	7	529	70
Georgia State	196	259	181	47	683	66	248	263	173	38	722	71
Tulsa	75	90	103	13	281	47	84	97	99	13	293	48

years until he is promoted to associate professor. If promoted, he may be tenured only if a tenure position is available in his department. If not, he is given limited tenure until a permanent position becomes available in his discipline.

An eleven-year apprenticeship period has also been adopted by the University of Georgia system, which is composed of the Univesity of Georgia and Georgia State University. In this system, the probationary period may reach eleven years for a faculty member progressing from the lowest rank to that of associate professor. Undoubtedly, the longest probationary period in the United States is that in place at the University of Tulsa, a private institution in Oklahoma. Faculty at Tulsa may be faced with a 13 year trial period before earning tenure. For instance, an assistant professor may serve six years in that rank and then be promoted to associate professor but not tenured. Instead he may be given a "term appointment" for six more years. Upon completion of the term, he must be either tenured or terminated.

Findings

It is extremely difficult to gauge the effects of these prolonged probationary periods until sufficient time has elapsed for faculty to make their way through the ranks and face the critical decision year. Nevertheless, it is possible to examine the fluctuation that has recently taken place in both the tenure rates and the proportion of upper to lower ranks in the three experiments (see Table 5).

In the case of Rochester, which initiated extended trial periods in 1972, the data in Table 5 demonstrate that the institution has maintained a stable rate of tenure (53%) while increasing both the total number of faculty and more importantly the number of assistant professors. The "limited tenure" system has allowed Rochester to increase the number of faculty in the three most important ranks without any increases in the tenure rate. It is also the case, according to the study conducted by Chait and Ford, that Rochester has not routinely reappointed its faculty. It has over a five-year period denied tenure to 30 faculty (p.112).

By contrast, the University of Georgia system adopted in 1975 has experienced noticeable increases in the tenure rates of its three universities. The University of Georgia went from a tenure rate of 57% to 64% while declining in total full-time faculty, most notably in the important entry-level rank of assistant professor. Both Georgia Tech and Georgia State also experienced noticeable tenure increases while significantly increasing the ratio of upper ranks to lower ranks.

Tulsa, which instituted its extended probation system in 1976, has maintained a stable tenure ratio with a slight decrease in the number of assistant professors.

Perhaps, the most that can be concluded from these three cases is that extended trial periods may give an institution the flexibility to promote faculty without automatically tenuring them. At most U.S. universities, tenure is almost automatically linked to promotion to the rank of associate professor. But as Rochester demonstrates, an assistant professor may be promotable but not tenurable. Standards for tenure at Rochester are more rigorous than those for promotion because of the long-term effects of the former on the institution.

Tenure Quotas and Holding Patterns

Extended probationary periods postpone tenure decisions for a finite time period. Another option exists postponing tenure decisions indefinitely: "suspension of the up-or-out rule". In most American higher education institutions, after seven years a probationary faculty member is either promoted "up" to the next rank or is put "out" and terminated. Some institutions have eliminated this rule and have placed faculty in a kind of "holding pattern" in the form of a new personnel classification, "tenurable" faculty. Under this system, faculty in their critical decision year are not tenured or terminated, but are declared "tenurable". Such faculty may be qualified for tenure but they are not awarded it because permanent positions are not currently available in the college. In many cases, institutions that have suspended the "up-or-out rule" have also instituted tenure quotas, setting maximum tenure percentages by rank and/or department.

One of the first U.S. colleges to set tenure quotas and discontinue the "up-or-out" provision was Union College (Schenectady, New York). In the early 1970's, the President of Union College projected that the 42% tenure rate would escalate to as high as 80% or 90% in the near future. In response, the College set up a tenure quota of 60% and eliminated the "up-or-out rule". Under this system, a joint committee of administrators and faculty conduct a four-year forecast of tenure requirements for every faculty position. Also a faculty review panel evaluates all candidates for tenure. The Board of Trustees then makes the final decision. It may grant tenure, issue a terminal one-year contract, or declare the candidate "tenurable" and award an indefinitely renewable three to five-year contract. A "tenurable" professor must be evaluated again by the panel before being tenured.

Similar "holding pattern" practices have been instituted at Hartwick College, which is located just 75 miles from Union, and at Albion College in New Lansing, Michigan. Hartwick issues four-year term contracts to "tenurable" faculty in departments that exceed 75% tenured faculty. Albion gives renewable two-year contracts to its "tenurable" faculty and awards tenure as vacancies become available.

Findings

Table 6 presents the number of full-time faculty by rank and the percentage changes in tenure over three years for the three small colleges that have abolished the "up-or-out rule".

Fifty-one percent of the faculty at Union presently hold tenure. According to the authors of a case study of Union, 19 additional faculty are "tenurable". This raises the tenure ratio to 64%. Also, they are in departments that exceed the maximum quota (60%) and they may have to be put on "hold" indefinitely. Furthermore, during the three year time period, the College has significantly increased the number of full professors with an accompanying reduction of assistant professors. Thus, the suspension of the critical year has allowed Union to "buy time" so to speak and postpone the inevitable.

Hartwick evidences a slightly different pattern. The tenure percentage has decreased and the number of associate professors has increased. The assistant professor ranks, however, has had a net decrease, suggesting that about half of the faculty facing the year of critical decision were promoted and made "tenurable" and the other half resigned or were terminated.

Table 6

Number of Full-Time Faculty by Rank and Tenure Rates
for Colleges Abolishing Critical Decision Year

Institution	Year	# in Rank Prof.	Assoc.	Asst.	Inst.	Total Full-Time Fac.	Tenured
Union	1979-80	34	57	40	6	137	49
	1982-83	53	58	32	8	151	51
Hartwick	1979-80	29	32	33	7	101	67
	1982-83	31	38	26	4	99	64
Albion	1979-80	37	36	24	14	111	66
	1982-83	38	31	38	16	123	61

At Albion, the tenure rate has declined over three years while the total number of staff has increased. Gains also have taken place in the number of assistant professors. In 1982-83 there were five fewer associate professors than in 1979-80. This would tentatively suggest that Albion has not automatically converted all promotable faculty to "tenurable" positions, but has in fact effected some turnover of staff at the lower rank.

The only real advantage served by the suspension of the up-or-out rule is that of allowing a college to retain faculty who would otherwise be terminated because of tenure quotas. Union College, according to Chait and Ford, had literally no place to put these faculty so it created a new class of academic citizens: tenurable faculty. But such categories are little more than artful machinations and subterfuges for the real thing, tenure. The real solution to tenure glut is sound personnel planning in light of institutional needs. Some private colleges and universities, particularly the University of Rochester and the Harvard Business School, the University of Wisconsin at Madison, and St. Olaf College (Northfield, Minnesota) have particularly effective tenure systems. Effectiveness, as Chait and Ford point, is characterized by building a superior academic reputation, practicing selectivity instead of routinely reappointing faculty, having less than two-thirds of the faculty tenured, and receiving support from both faculty and administration for its tenure policies.

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SOME EXAMPLES OF DIFFERENTIATION WITHIN THE DUTCH ACADEMIC STAFF BETWEEN 1959 and 1973

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Introduction

The author has at his disposal a number of data concerning the Dutch academic staff in the period 1959-1973. Those data have been used to present background information on behalf of the Project on Manpower Planning within Dutch Higher Education.

The size of Dutch Faculty or academic staff, from university professor to Ph.D. assistant, was about four times larger in 1973 than it was in 1959. The fastest growth took place betwen 1963 and 1971; after 1971 a slowing down started (see Figure 1).

Within this fastly growing number, the increase of ranks which are discerned in Dutch faculty (see Appendix), shows big differences (see Figure 2):

- full professors and university professors had a steady growth;
- assistant and, especially, associate professors had a very large increase;
- the Ph.D. assistants as a rank declined considerably in members.

The composition of the Dutch faculty in percentages during the 1959-1973 period is drawn in Figure 3. We notice that the percentage of university-, full- and associate professors, that is to say the higher paid ranks, is higher than 50 during the whole period.

Of course there are big differences between disciplines within the academic staff as a whole. We present the development of the composition of faculty in law and chemistry in Figure 3a and 3b. The proportion of full- and university professors within the discipline of law went down from 62% in 1959 to 25% in 1973! The proportion of associate professors is rather constant; the percentage of assistant professors B on the other hand rose from 5% in 1959 to 25% in 1973. The percentage of Ph.D. assistants and assistant professors A fluctuated between 20 and 30.

In the discipline of chemistry we find 23% of faculty in the rank of full- and university professor in 1959; this percentage sank to 13 in 1973. All other ranks grew lightly between 1959 and 1973. The picture as a whole is rather stable compared to the developments within the discipline of law during this period.

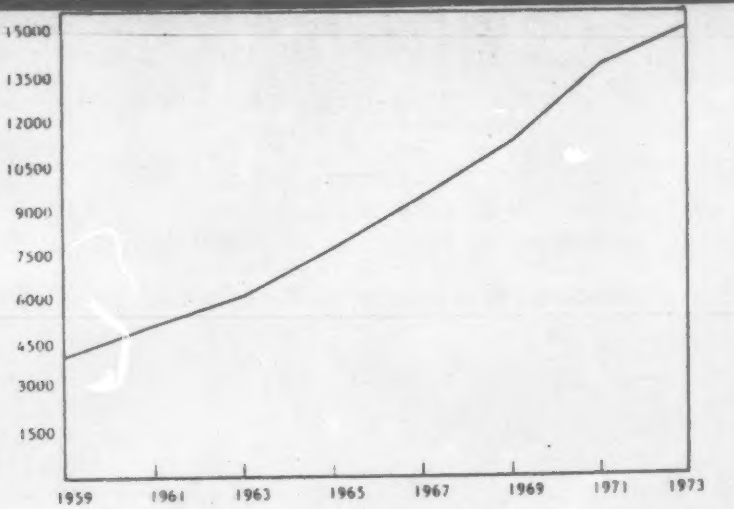


Fig.1 : Development number of persons in Dutch Academic Staff as a whole; 1959-1973.

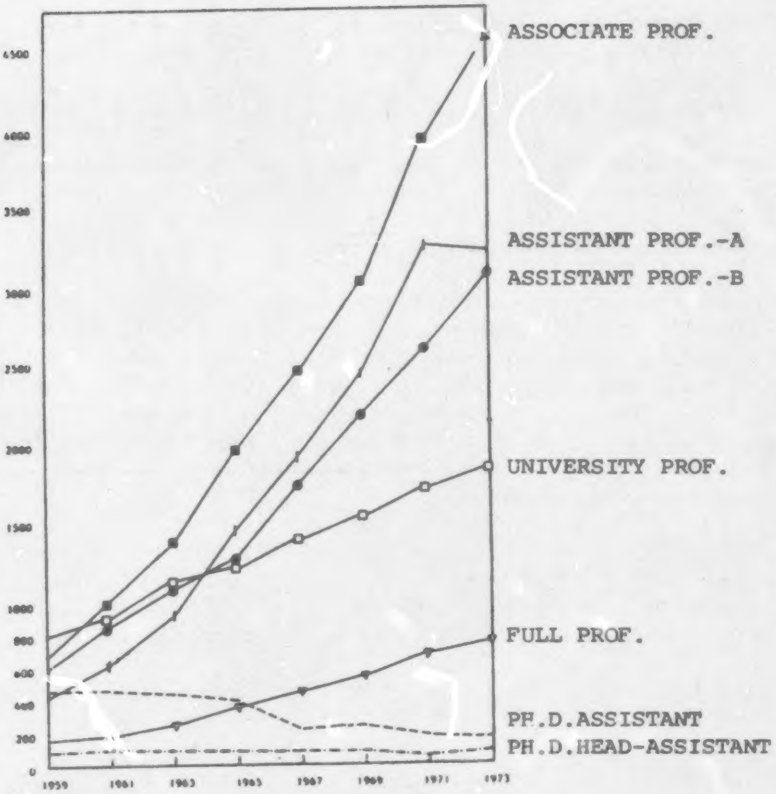


Fig.2 : Development number of persons in seven ranks within the total of Dutch Academic Staff; 1959-1973.

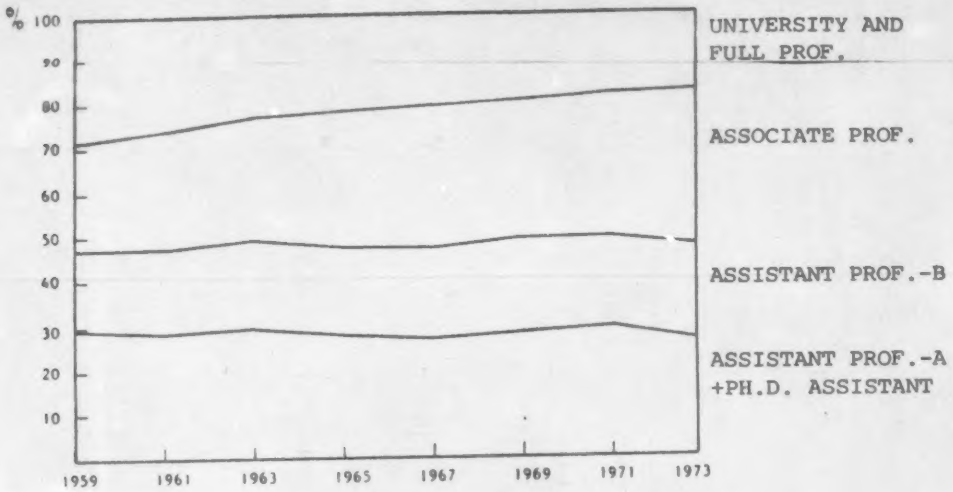


Fig.3 : Development composition Dutch Faculty as a whole, distinguished in 4 categories.

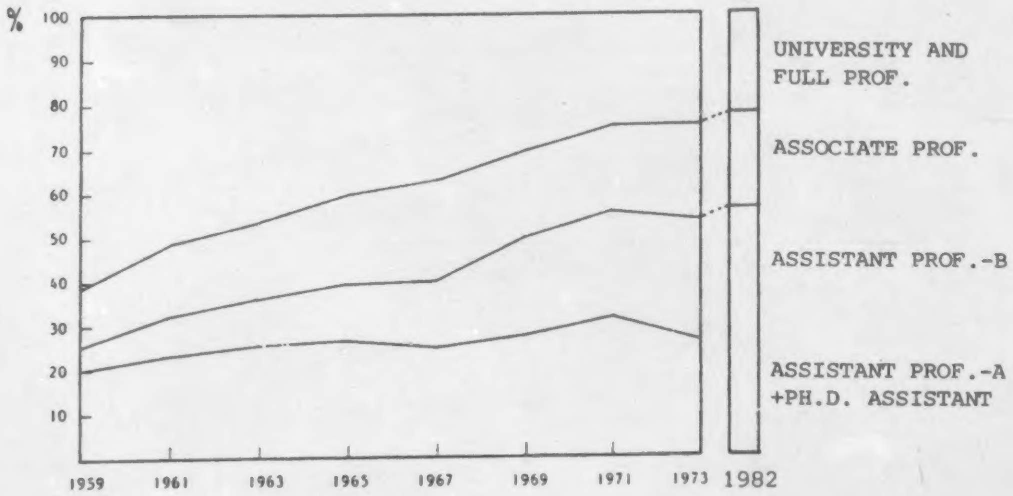


Fig.3a: Idem, Faculty of Law

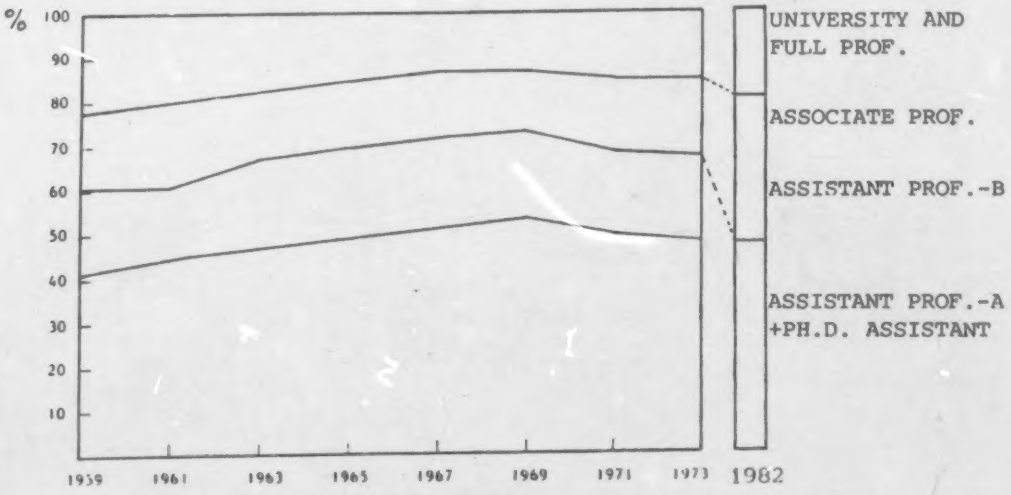


Fig.3b: Idem, Faculty of Chemistry

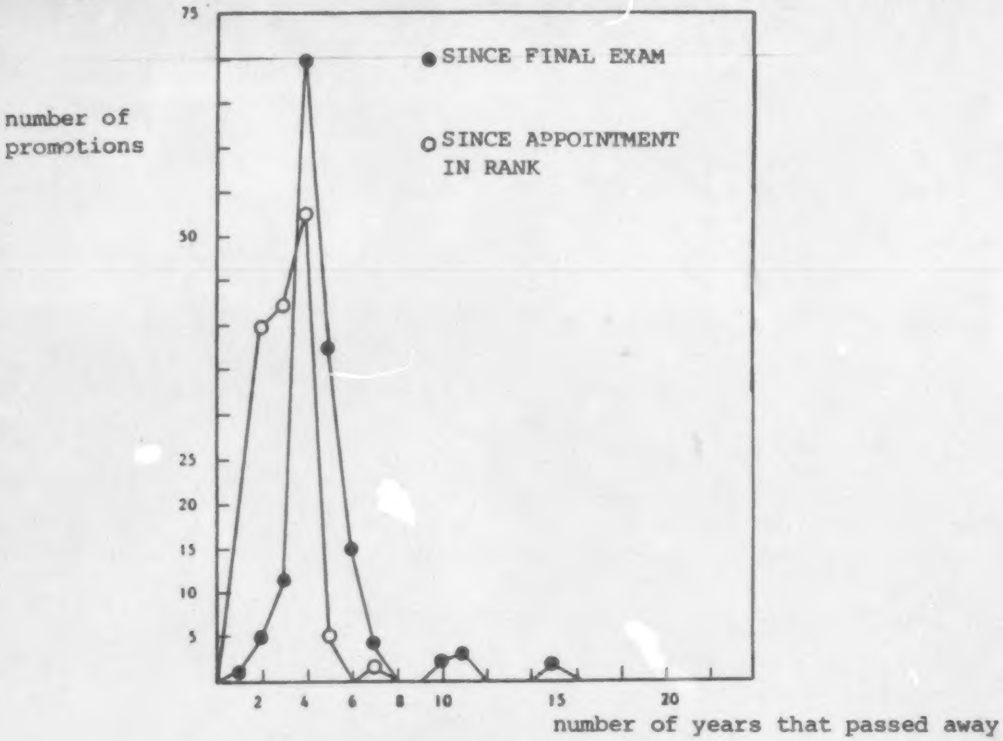


Fig. 4 : Promotions from rank Assistant Professor-A to Assistant-Professor-B; comparison of number of years that passed since appointment in rank and since date of final academic exam at moment of promotion; discipline of law, 1959-1973.

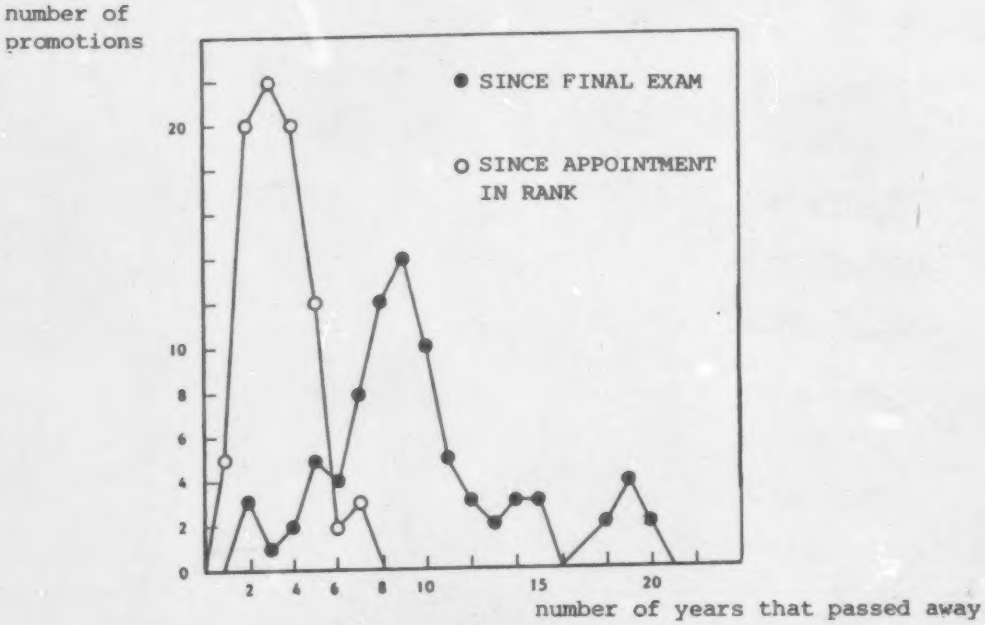


Fig. 5 : Promotions from rank Assistant Professor-B to Associate Professor : comparison of number of years that passed since appointment in rank and since date of final academic exam at moment of promotion; discipline of law; 1959-1973.

Promotions

We will go first into the question of promotion from the rank assistant professor A and assistant professor B; does promotion depend on the number of years spent in each of these ranks, or is promotion dependent on the number of years that has passed since the final academic exam? In this last case we look in fact at experience in the concerning professional field as a whole. The data of each member of academic staff in the period 1959-1973 have been analyzed as far as career development and promotion have developed in relation to both data; that is to say: the number of years that had passed at the moment of promotion since either the appointment in a specific rank, or the date of the final academic examination. We present the results for the discipline of law within the Dutch university system.

Promotion from the rank assistant professor A to assistant professor B (see Figure 4) knew a great similarity between both approaches as well as a small dispersion. Figure 5 refers to promotion from assistant professor B to associate professor; here we notice a rather big difference between both approaches: promotion related to the number of years that passed since appointment in the rank assistant professor B shows a small dispersion and is almost the same as in the first case (Figure 4). When we relate promotion from assistant professor B to associate professor to the number of years that passed since the final academic examination, there exists a large dispersion. For this reason, the determination of the chance for promotion in a simulation model can best be related to the number of years that has been spent in a particular rank. Figure 5 indicates that this is also the case in reality.

Comparable analyses have been made for the whole of Dutch academic staff and faculty within the discipline of chemistry. The results point into the same direction.

Outside Experience

Our next question: is there influence from, yes or no, experience outside the university system upon the point of time of promotion. We distinguish between faculty who enter university directly after their final academic examination, and faculty who fulfilled a function outside the university before becoming a faculty member. (People who fulfilled their military service immediately after their final academic examination and entered then into the university, are included in the first category.) There could be assumed that people with external experience are promoted earlier than faculty without this experience. Again the analysis has been made for faculty in the discipline of law. Distinction has been made between the period 1959-1968 and 1969-1973. Figure 6 gives the results.

Academic staff with outside experience is promoted from assistant professor A to assistant professor B sooner than faculty without this experience between 1969 and 1973. Promotion to the associate professorship from the rank assistant professor B of people without external experience took a smaller number of years during the period 1959-1968 than between 1969 and 1973. For faculty with outside experience there was not much difference between both periods in this respect. At the same time we can see that academic staff with external experience was promoted from assistant professor B to associate

Category	Period	Average number of years that passed between			
		entry into acad. staff and promotion to assist. prof. B	promotion to assist. prof. B and promotion to associate prof.	final acad.exam and promotion to	
				assist.prof B	associate prof.
Entry into acad. staff without outside experience.	1959-1968	2.6	2,8	5,4	8,4
	1969-1973	3,9	5,4	5,1	11.2
Entry into acad. staff with outside experience	1959-1968	2,6	4.3	7,4	12,4
	1969-1973	2,5	3,5	5,4	10,6

Fig. 6 : Discipline of law : comparison between academic staff that entered without outside experience after final acad.exam and faculty that fullfilled a function outside the university before entrance, with respect to the point in time of promotion; 1959-1968 and 1969-1973.

professor after a longer period than people without external experience between 1959 and 1968; between 1969 and 1973 the opposite was the case.

When we take the number of years that passed since the final academic examination, we notice that promotions to assistant professor B took place faster for people without external experience. The number of years that passed between the final academic exam and promotion to associate professor was larger for people with external experience between 1959 and 1968, but smaller from 1969 to 1973.

The assumption that external experience has a positive influence on the pace of promotion is not convincingly affirmed for faculty in the discipline of law. Analyses of faculty in the discipline of chemistry and of the academic staff as a whole, lead to the same conclusion for the 1959-1973 period.

Origin of Professors

In Figure 3a and 3b we already mentioned rather big differences between the percentage of full- and university professors within the disciplines of law and chemistry. A summary of the difference in the origin of full- and university professors is given in Figures 7 and 8.

Within the discipline of law there has been a shift towards outside recruitment of full professors and a high and stable percentage of externally recruited university professors. The percentage of associate professors without promotion after a stay of 14 years in this rank grew from 25 (1959-1968) to 30% (1969-1973); a decline of career possibilities can be concluded from this. Nevertheless, there is no question of a growth in internally recruited full- or university professors within the discipline of law; the opposite was the case! This is the more remarkable, when we look at Figure 3a.

Chemistry gives a completely different picture. The accent on recruitment of full- and university professors from associate and assistant professors in the same university, is very clear and growing. This discipline has been chosen for an enlargement of career perspectives of its own faculty.

Development of Age

Differences in developments in composition of faculty have their impact on other developments, for instance: the development of the average age.

Average age of Dutch academic staff declined from 39.6 in 1959 to 38.0 in 1968 and rose to 38.3 in 1973: a rather stable picture.

The discipline of law knew a considerable rejuvenation between 1959 and 1973: the average declined from 45.6 to 38.3. Figure 9 gives information per rank. The associate professors knew otherwise a growing average age since 1965; another indication for declining career possibilities.

Within chemistry the picture is much more stable (see Figure 10), as was the picture of developments in the composition of ranks in this discipline

Appointment as / Period / Origin	Full professor		University professor	
	1959-1968	1969-1973	1959-1968	1969-1973
Assist./assoc. professor at same university	86%	50%	25%	29%
Assist./assoc. professor at other university or from outside acad.staff	14%	50%	71%	65%
Transfer as full/univ. professor from other univ.	-	-	4%	6%
N	14	30	95	71

Fig. 7 : Discipline of law : origin of full and university professors, distinguished by three categories; 1959-1968 and 1969-1973.

Appointment as / Period / Origin	Full professor		University professor	
	1959-1968	1969-1973	1959-1968	1969-1973
Assist./assoc. professor at same university	87%	89%	29%	56%
Assist./assoc. professor at other university or from outside acad.staff	13%	11%	71%	40%
Transfer as full/univ. professor from other univ.	-	-	-	4%
N	31	36	34	23

Fig. 8 : Discipline of chemistry : origin of full and university professors, distinguished by three categories; 1959-1968 and 1969-1973.

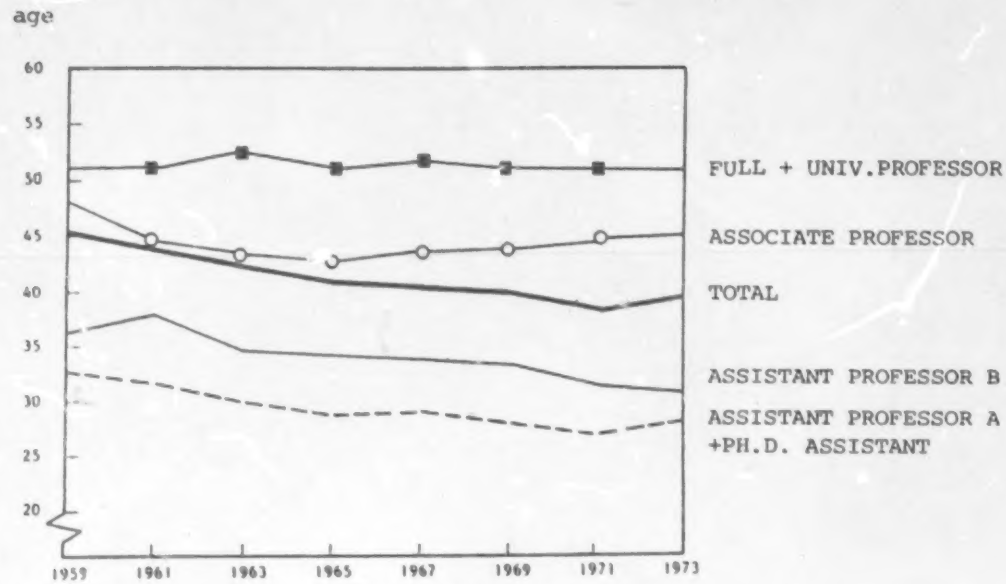


Fig. 9 : Discipline of law : development average age per category of rank and faculty of law as a whole; 1959-1973.

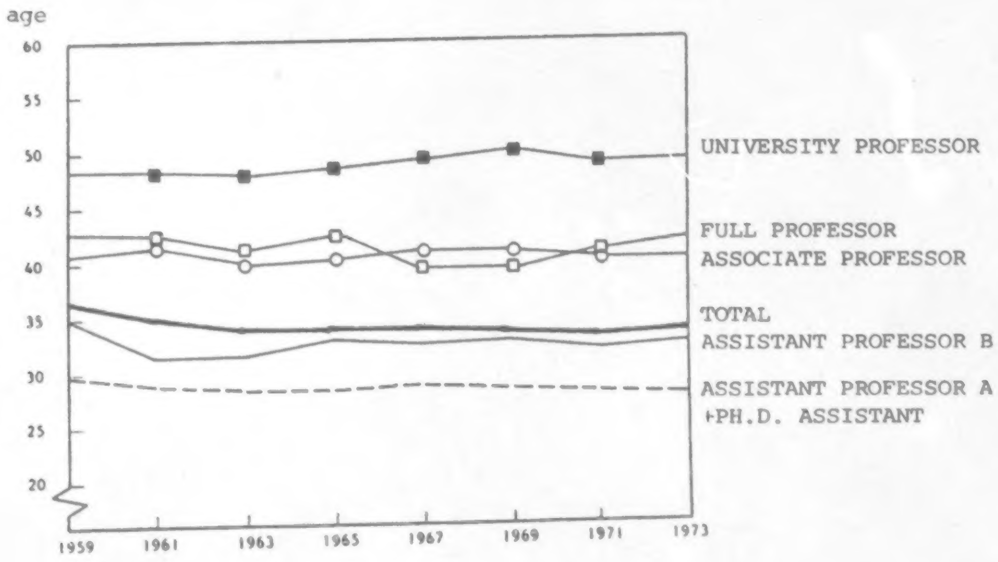


Fig.10 : Discipline of chemistry : development average age per category of rank and faculty of chemistry as a whole; 1959-1973.

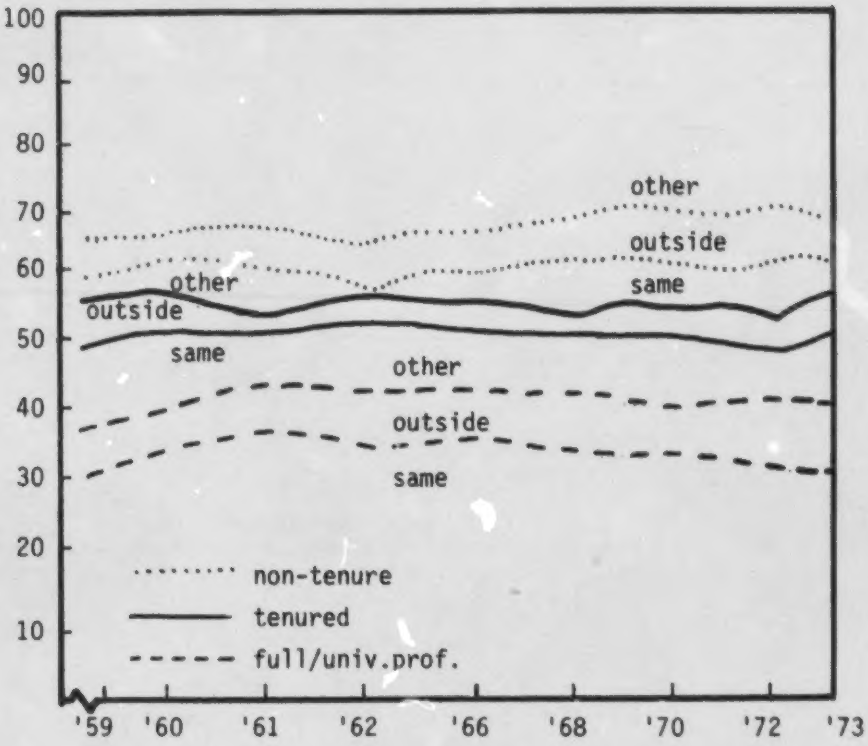


Figure 11 : Development of composition on three categories of Academic Staff with regard to origin : university where appointed is the same as university where academic study took place, university where appointed is other Dutch university than where study was done, academic study took place outside Dutch university system; 1959-1973.

(Figure 3b). Between 1959 and 1973 the average age fluctuated around 35.0. The difference in average age between law and chemistry is caused mainly by the higher percentage of junior ranks in the latter (see Figures 3a and 3b).

Inbreeding

A last topic of differentiation within the academic staff we mention, is the relationship between the university where someone's academic study and final academic examination took place, and the university where one is appointed. This topic has among other things to do with inbreeding; we do not go into the qualitative aspects of this topic. We distinguish three categories of academic staff: entry or presence as assistant or associate professor without tenure, entry or presence as assistant or associate professor with tenure and entrance or presence as full or university professor. With regard to origin we distinguish three categories also: appointment in the same university where the academic study took place, the academic study was done at another Dutch university than where appointment takes place, the academic study was done outside The Netherlands.

First, our analysis indicates that the percentage of inbreeding, that is to say of people with an appointment in the same university where they did their academic study, is the highest for non-tenured faculty and the lowest for full and university professors (see Figure 11).

Second, our analysis gives a relationship between the number of years that passed since the final academic exam at the point in time of entrance into the academic staff and the three categories of origin we distinguish (see Figure 12). For entrants into the academic staff without tenure, we see that the percentage of inbreeding is higher when the number of years since the final academic exam is smaller. Entrants who did their academic study outside the Dutch university system give the opposite picture. For entrants who studied at another Dutch university than the university where they are appointed, the picture is more or less comparable with the last one. For each period of five years between 1959 and 1973 the relationships are the same.

From our analyses we developed the following general model to explain the occurence of inbreeding within the Dutch academic staff (Figure 13): inbreeding diminishes and proportion of people who studied elsewhere grows when:

- it is more difficult to undo a decision of appointment,
- procedures of appointment are more formal and open,
- frequency of appointments is lower,
- rank/function of appointment is more important,
- chance of mixing up the roles of student/applicant and educator/future employer diminishes.

Influence of university management upon the composition and quality of academic staff can be exercised most directly at the moment of recruitment and entrance of new faculty members. This model offers handles for recruitment policy and indicates that many factors have been at work during the past decennia when thousands of new members of academic staff have been recruited. Besides the differentiation within the Dutch faculty we have distinguished already, the model adds the origin as far as the institution of academic study is concerned and the topic of tenure.

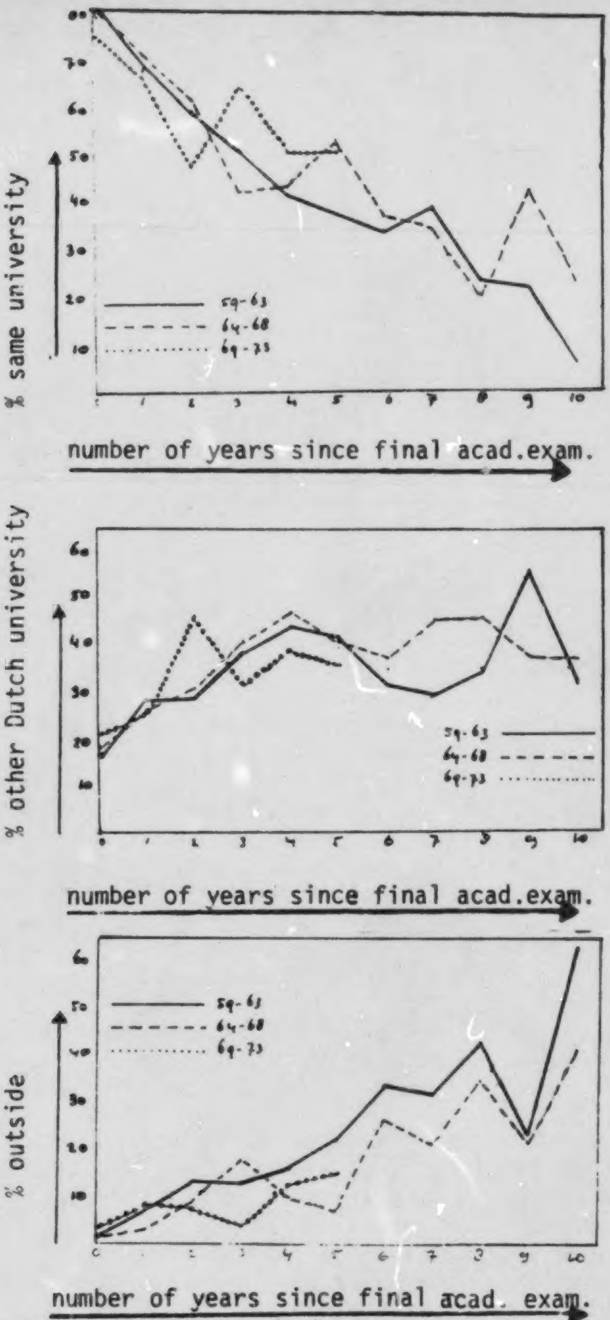
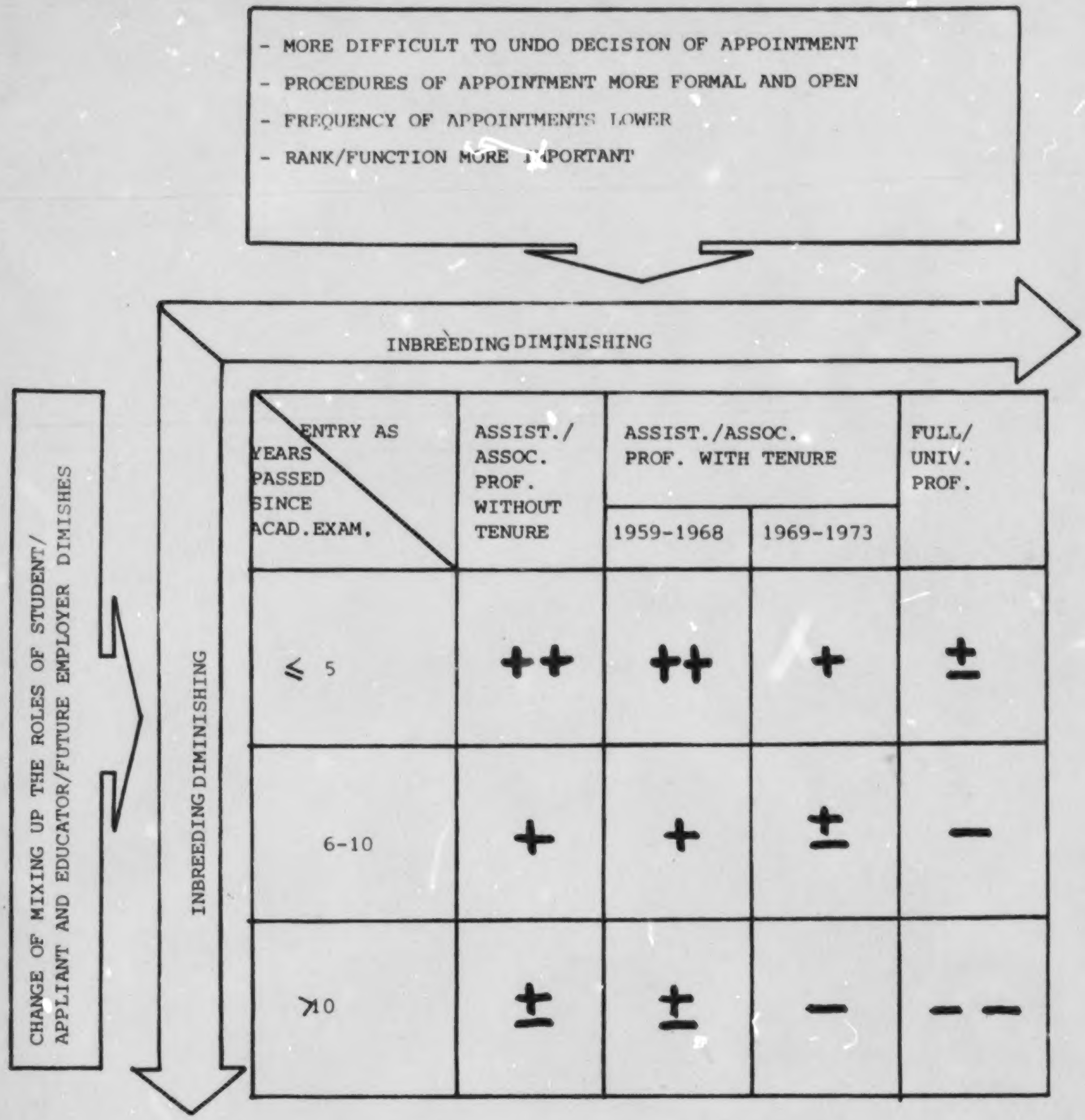


Fig 12 : Entrants into academic Staff without tenure : relationship between number of years that passed since final academic exam and three categories of origin with respect to place of study; 1959-1963, 1964-1968, 1969-1973.


- MORE DIFFICULT TO UNDO DECISION OF APPOINTMENT
- PROCEDURES OF APPOINTMENT MORE FORMAL AND OPEN
- FREQUENCY OF APPOINTMENTS LOWER
- RANK/FUNCTION MORE IMPORTANT
INBREEDING DIMINISHING
CHANGE OF MIXING UP THE ROLES OF STUDENT/ APPLIANT AND EDUCATOR/FUTURE EMPLOYER DIMISHES
INBREEDING DIMINISHING

ENTRY AS / YEARS PASSED SINCE ACAD.EXAM.	ASSIST./ ASSOC. PROF. WITHOUT TENURE	ASSIST./ASSOC. PROF. WITH TENURE		FULL/ UNIV. PROF.
		1959-1968	1969-1973	
≤ 5	++	++	+	±
6-10	+	+	±	−
>10	±	±	−	− −

Fig. 13 : Model to explain the occurence of inbreeding within Dutch academic staff; 1959-1973

Conclusion

The general picture of academic staff within the Dutch university system between 1959 and 1973 combines an enormous quantitative growth with a rather automatical promotion after entrance into the system up till the level of full professor. From 1959 to 1968 about 70% of assistant professors A were promoted and about 30% left. From assistant professors B 70% were promoted after 4.2 years; 30% left the university. About 50% of entrants into the rank assistant professor A were promoted into the rank of associate professor after an average of 7.6 years; the other 50% left before.

For the period 1969-1973 these figures are: 40% of recruits into the rank assistant professor A were promoted to the rank of associate professor of 8.1 years; 60% left.

This general picture, so we have seen, has many nuances: for instance differences between disciplines within the university system, differences between academic staff with and without experience outside the university and differences as far as origin with reference to university of academic study is concerned. Even within a small country like The Netherlands, diversity in developments and differences within the university system that comprises only a dozen universities, are substantial. There are considerable differences within specific disciplines also: the rank structure of law and chemistry faculty in the universities of Amsterdam and Utrecht for instance, differed a lot (see Figure 14).

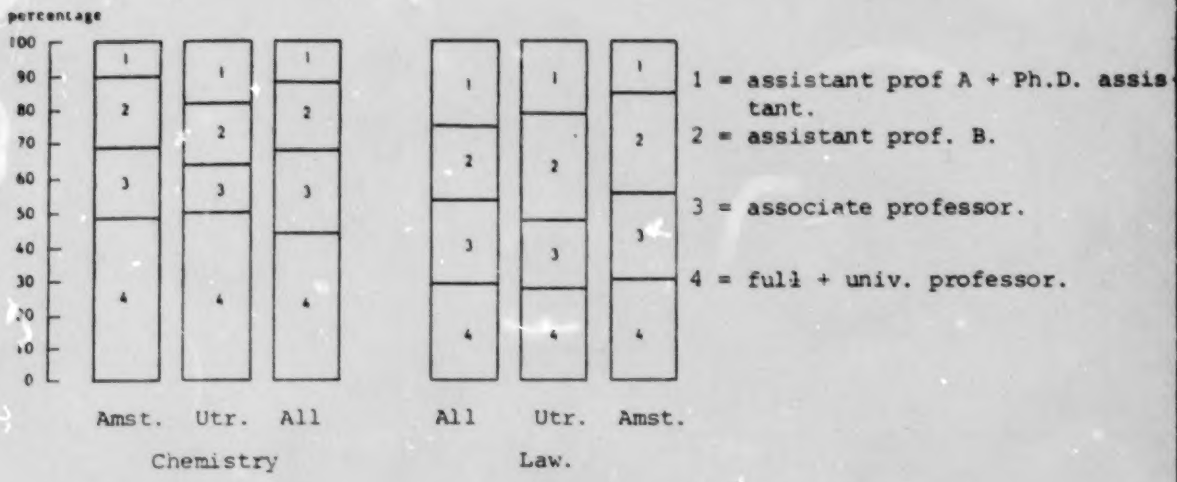
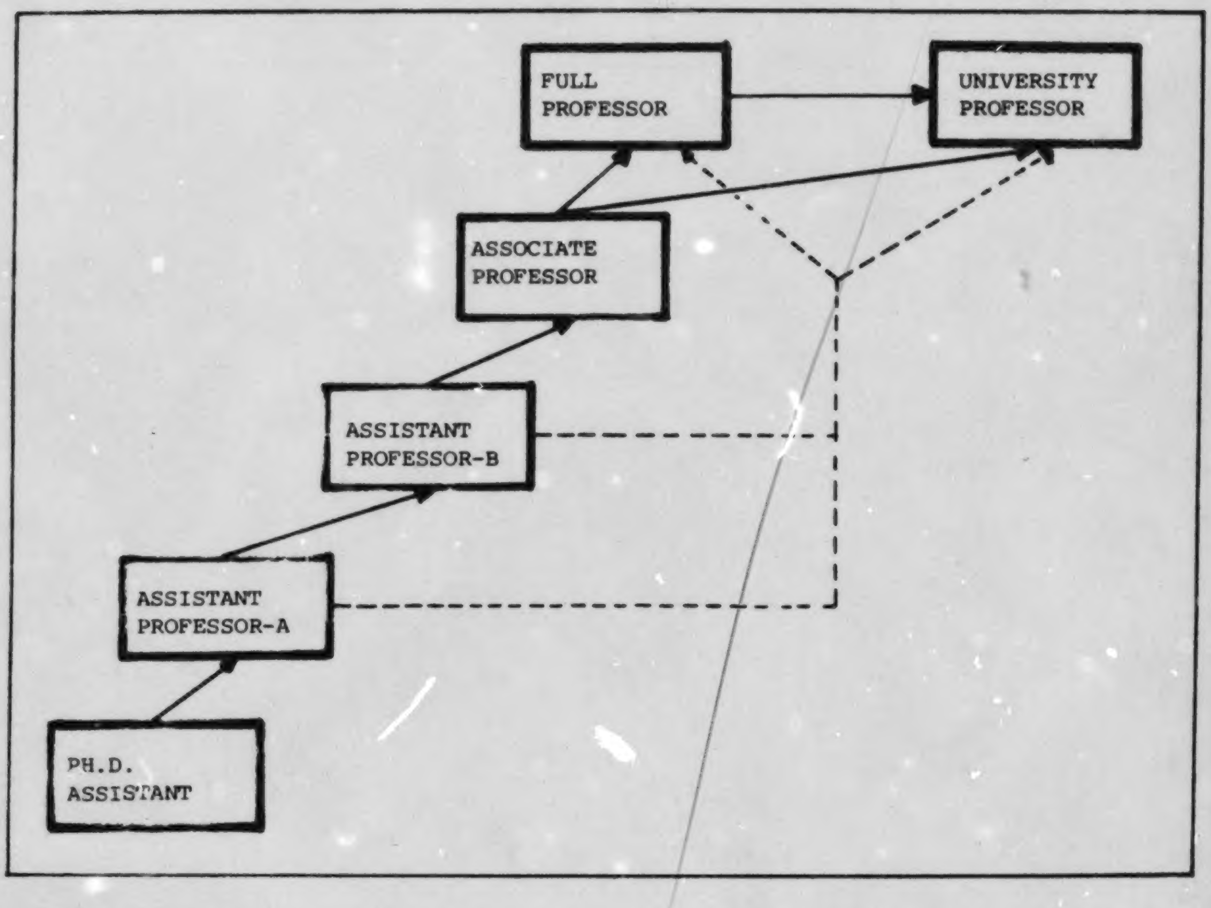


Fig 14 : Composition of rank of academic Staff in Chemistry and Law; faculty in discipline as a Whole and in university of Amsterdam and Utrecht; 1973.

Between 1959 and 1973 the quantitative growth of academic staff has been tremendous. Differences and nuances have been able to develop rather rapidly and do exist from that period up till now.

This considerable differentiation within faculty as a whole and the necessarily slow pace of change in a period of budget cuts, ask for a much more elaborated system of measures than existed during the sixties: general but rough measures in a period of growth do not prevent from developments of balanced organizational structures. Breaking down those fragile structures without much damage takes much more time and asks for study of past develpments and careful simulation of measures before they are implemented.

APPENDIX : SCHEMATIC PICTURE OF STRUCTURE DUTCH ACADEMIC STAFF; TRANSLATION OF DUTCH RANK DENOMINATION


FULL PROFESSOR
UNIVERSITY PROFESSOR
ASSOCIATE PROFESSOR
ASSISTANT PROFESSOR-B
ASSISTANT PROFESSOR-A
PH.D. ASSISTANT

HOOGLERAAR-B	UNIVERSITY PROFESSOR
HOOGLERAAR-A/LECTOR	FULL PROFESSOR
WET.HOOFDMEDEWERKER (A)	ASSOCIATE PROFESSOR
WET.MEDEWERKER 1e KLAS	ASSISTANT PROFESSOR-B
WET.MEDEWERKER	ASSISTANT PROFESSOR-A
WET.ASSISTENT	PH.D.ASSISTANT

AN APPLICATION OF THE MANPOWER PLANNING SYSTEM FORMASY WITHIN THE DUTCH UNIVERSITIES

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Introduction

Wessels introduced in his paper (1983) the basic ideas behind the forecasting procedures on which the conversational computer system Formasy is based. This paper discusses some applications within the Dutch universities. For a description of the Formasy system and a detailed outline of the basic models the reader is referred to Verhoeven (1982); some basic ideas are given in Van Nunen and Wessels (1978). For a more detailed description of the model that was used to describe flows of university staff the reader is referred to Tetteroo (1983).

In the last decade the Dutch ministry of education initiated a number of reorganizations of the universities. These reorganizations should result in an "improvement" of the structure of the staff occupation as well as in a reduction of costs. However one did not always have a good insight as to the consequences of the changes that were proposed.

Without going into detail one can say that one of the ways in which the ministry tried to reach the goals was by decreasing the number of full professors (FP), university professors (UP) and associate professors (ACP) in favour of the number of assistant professors (ASP) and PhD-assistants. The actual distribution over the different grades differs per university, aggregated information for all universities is given in Table 1. The total number is about 16,000 scientific staff members.

Table 1

Distribution of Scientific Staff over the Different Grades

	PHDA - ASP	ACP	FP - UP
Actual Occupation	56 %	26 %	18 %
Goal	64.3 %	21.4 %	14.3 %

In addition one strives after a decrease in the total number of faculty staff was sought.

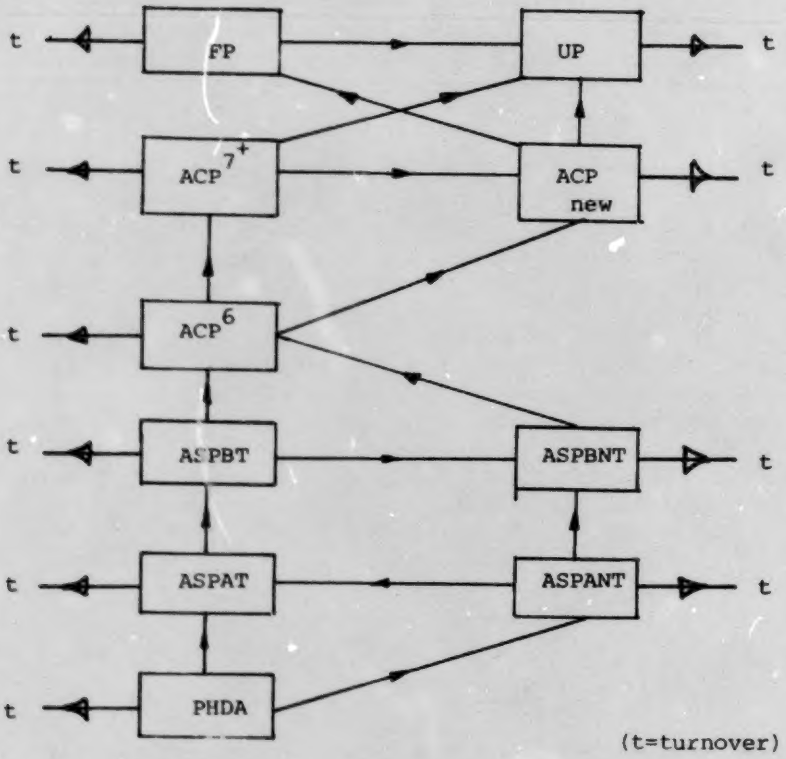
Moreover, some more detailed guidelines with respect to, for instance, the proportion of university professors to full professors are given. For detailed information see Tetteroo. One of the questions is in which time and how can these goals be achieved by an acceptable promotion and recruitment policy and how long will it take. By acceptable we mean that other aspects like workload, social aspects, etc. are taken into account as far as possible within the financial and other governmental constraints. Detailed information with respect to the secondary aspects is beyond the scope of this paper; the interested reader is again referred to Tetteroo (1983).

Structure of the Grades of the Faculty at Dutch Universities

The following grades can be distinguished in the faculty of a Dutch university:

Figure 1

Flow-model of the Faculty of Dutch Universities


FP
UP
ACP 7+
ACP new
ACP 6
ASPBT
ASPBNT
ASPAT
ASPANT
PHDA
t
(t=turnover)

The meaning of the abbreviations that are used in Figure 1 are listed in Table 2.

Table 2

Names and Abbreviations of the Faculty Grades

Grade Number	Grade Name	Grade Explanations
10	U[illegible]	University Professor
9	FP	Full Professor
8	ACPNEW	Associate Professor (new)
7	ACP^{7+}	Associate Professor (old) with a salary anciennity (grade age) larger than 6
6	ACP^{6}	Associate Professor (old) with a salary anciennity less than 7
5	ASPBT	Assistant Professor B with tenure
4	ASPAT	Assistant Professor A with tenure
3	ASPBN	Assistant Professor B without tenure
2	ASPAN	Assistant Professor A without tenure
1	PHDA	PhD-assistant

The old grade of associate professor consisted of a concatenation of the two grades ACP^{7+} and ACP^{6}. In the situation, that will be created in the near future, the grade ACP^{7+} will disappear after some time. In 1984, qualified staff in ACP^{7+} and ACP^{6} will be placed in grade ACP. Moreover, promotion from ACP^{6} to the new grade ACP will be regulated by stronger conditions with respect to quality.

Evaluation of alternatives

In this section we will evaluate as an example alternative promotion and recruitment policies for one university for the planning period 1982-1986. We assume as is so in the Dutch situation, that firing of tenured staff is not allowed. However one can try to reach the goal distribution as given in Table 1 by partly filling up vacancies with faculty staff with lower grades. Although we could formulate the alternatives in terms of a proposed decrease of the salary budget we will base the discussions in this paper on alternatives that are formulated in terms of a decrease of the total numbers of faculty staff.

Alternative 1: 0%, no decrease in number of staff members, but one should strive for a distribution of 4.5 : 1.5 : 1 for (PHDA + ASP) : (ACP) : (FP + UP).

Alternative 2: -5%, a decrease in the total number of staff numbers of 5% in the period 1982-1986, again one strives for a distribution of 4.5 : 1.5 : 1.

Moreover, some secondary conditions have to be taken into account for both alternatives.

Secondary Conditions

- The new structure becomes effective in 1984;
- Of every two vacancies at the level FP and UP one vacancy may be filled by a FP;
- The number of ACP-new should be according to the distribution 4.5 : 1.5 : 1 ;
- 20% of the personnel should be nontenured.

Let us first consider the current (1982) situation of the staff distribution within the university under consideration. For each grade and grade age the distribution is given in Table 3.

Table 3

Current Grade (age) Distribution

Grade age	PHDA	ASPAN	ASPBN	ASPAT	ASPBN	ASP^6	ACP^{7+}	ACP	FP	UP	
0	11	2	0	1	0	0	0	0	1	2	
1	38	5	1	4	1	0	0	0	0	0	
2	9	13	0	3	1	2	0	0	0	0	
3	13	10	6	9	11	4	0	0	1	0	
4	61	15	3	11	12	15	0	0	4	0	
5	84	10	4	6	21	25	0	0	3	0	
6	24	2	7	6	18	52	0	1	3	2	
7	14	5	5	10	48	171	59	1	5	4	
8	0	4	15	11	310	0	54	35	5	4	
9	0	7	0	15	0	0	49	0	5	0	
10	0	13	0	43	0	0	51	0	4	2	
11	0	0	0	0	0	0	51	0	10	5	
12	0	0	0	0	0	0	441	0	130	1	
13	0	0	0	0	0	0	0	0	0	2	
14	0	0	0	0	0	0	0	0	0	179	
Total	253	85	41	118	421	269	705	37	171	201	2301
Percentage	18			33			32		17		100%

Note the percentages of ACP^{7+}, of nontenured staff, and the percentage of FP and UP.

The current age distribution is given in Figure 2.

Figure 2

Age Distribution of the Faculty Staff

```
Year:  1982

Age  Number
 70   *
 69   *9**
 68   *9***
 67   *9*
 66   *9***
 65   *9*
 64   *777799****
 63   *67778999***
 62   *1677799***
 61   *67777777899*****
 60   *6777789****
 59   *566777777777899999****
 58   *156777777777789****
 57   *57777778999******
 56   *6677777777788999******
 55   *5667777777777789999*******
 54   *6777777777777888999*****
 53   *567777778999999*****
 52   *1566777777777778999****
 51   *25566777777777777777778999999******
 50   *155666777777778999****
 49   *556667777777777777999****
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 47   *2556667777777777777777788999**
 46   *556677777777777777777789999****
 45   *5556666677777777777777899999****
 44   *5555566666667777777777777779999***
 43   *15555666777777777777777777777777999*
 42   *55555555666667777777777777777777779**
 41   *134555555666667777777777777777777799***
 40   *13555555555556666666666677777777777777777777799*
 39   *1223445555555555555555555566666666666667777777777777777999**
 38   *344455555555555555555556666666666666677777777777777999*
 37   *13334455555555555555555666666666777777779
 36   *22333444455555555555555555555555555555555555566666666666677779*
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 27   *111111111111111111111112234
 26   *1111111111111111112
 25   *111111112
 24   *111
 23   *
 22   *
 21   *
 20   *
```

1 figure is 2 staff members.

If a recruitment and promotion policy is used within the conditions that were given before (0%-alternative), we can compute forecasts for the grade distribution in the period 1982-86 (see Table 4). In Table 5, the corresponding forecasts for the salary costs are given. This can be done since in the Dutch system, salary costs are determined uniquely by the grade and the grade age.

Table 4

Forecasts for the Grade Occupation for the 0%-alternative

	PHDA	ASPAN	ASPBN	ASPAT	ASPBT	ACP^{6}	ACP^{7+}	ACP	FP	UP	TOTAL
1982	253	85	40	118	421	269	705	38	171	201	2301
1983	268	99	3	112	411	312	677	36	172	191	2281
1984	304	119	1	111	389	258	277	493	177	160	2289
1985	332	116	0	107	376	276	266	494	183	151	2301
1986	345	115	0	110	369	287	253	493	191	138	2301

Table 5

Forecasts for the Salary Costs for the 0%-alternative
(in million guilders)

	PHDA	ASPAN	ASPBN	ASPAT	ASPBT	ACP^{6}	ACP^{7+}	ACP	FP	UP	TOTAL
1982	15.80	6.17	3.71	9.21	40.30	28.64	86.94	4.70	24.61	33.70	253.78
1983	15.21	5.89	0.29	8.09	39.03	33.17	83.39	4.55	24.70	32.13	246.46
1984	17.00	7.24	0.06	7.69	36.72	27.24	34.13	60.02	25.01	26.94	242.06
1985	18.99	7.08	0.01	7.34	35.18	29.16	32.82	60.41	25.79	25.45	242.23
1986	20.07	7.03	0.00	7.54	34.19	30.46	31.21	60.48	26.82	23.24	241.03

Note that in 1986 the goals are only partly reached. There are still too many FP and UP while a large number of ACP^{7} , with a relatively high salary, are still in the system. The percentage of 20% non-tenured staff members can be reached in this period. Although the total amount of staff remains constant, we see that the salary costs decrease about 5%.

We will not discuss whether such a solution still enables the faculty staff to meet the research and educational tasks. For the alternative of a reduction of the total staff of 5% the forecasts are given in Tables 6 and 7.

Table 6

Forecasts for the Grade Distribution for the -5%-alternative

	PHDA	ASPAN	ASPBN	ASPAT	ASPBT	ACP^{6}	ACP^{7+}	ACP	FP	UP	TOTAL
1982	253	85	40	118	421	269	705	38	171	201	2301
1983	258	94	3	97	401	312	677	36	172	191	2241
1984	284	116	1	86	370	258	288	482	177	160	2222
1985	313	114	0	83	342	282	277	476	179	151	2217
1986	328	109	0	82	315	300	264	468	182	138	2186

Table 7

Forecasts for the Salary Costs for the -5%-alternative
(in million guilders)

	PHDA	ASPAN	ASPBN	ASPAT	ASPBT	ACP^{6}	ACP^{7+}	ACP	FP	UP	TOTAL
1982	15.80	6.17	3.71	9.21	40.30	28.64	86.94	4.70	24.61	33.70	253.78
1983	14.68	5.59	0.29	7.18	38.25	33.17	83.39	4.55	24.70	32.13	243.94
1984	15.92	7.00	0.06	6.18	35.17	27.24	35.54	58.61	25.01	26.94	237.68
1985	17.88	6.98	0.01	5.79	32.41	29.85	34.17	58.25	25.29	25.45	236.07
1986	19.09	6.65	0.00	5.69	29.81	31.89	32.49	57.59	25.70	23.24	232.16

Note that a 5% reduction of staff results in a cost reduction of 8.5%. The number of UP and FP is still too high. If after 1986 the total number is allowed to remain constant then one might consider long term effects of a recruitment and promotion policy as described.

Numerical information is given in Tables 8 and 9. Note that the reduction of costs on a yearly basis will increase to about 12% in 1986.

Table 8
Forecasts for the Grade Distribution

1982 - 1986 -5%-alternative
1986 - 1996 Total faculty staff remains constant

	PHDA	ASPAN	ASPBN	ASPAT	ASPBT	ACP^{6}	ACP^{7+}	ACP	FP	UP	TOTAL
1982	253	85	40	118	422	269	705	38	171	202	2301
1983	258	94	3	97	401	312	677	36	172	191	2241
1984	264	116	1	86	370	258	288	482	177	160	2222
1985	313	114	0	83	342	282	277	476	179	151	2217
1986	328	109	0	82	315	300	264	468	182	138	2186
1987	328	109	0	110	298	308	253	468	181	131	2186
1988	328	109	0	136	283	310	240	468	188	124	2186
1989	328	109	0	161	275	308	225	468	194	118	2186
1990	328	109	0	181	270	303	215	468	203	109	2186
1991	328	109	0	204	269	294	202	468	208	104	2186
1992	328	109	0	220	271	289	189	468	208	104	2186
1993	328	109	0	228	281	284	176	468	208	104	2186
1994	328	109	0	230	293	279	167	468	208	104	2186
1995	328	109	0	232	308	273	156	468	208	104	2186
1996	328	109	0	235	324	269	141	468	208	104	2186

Table 9
Forecasts for the salary costs

1982 - 1986 -5%-alternative
1986 - 1996 Total faculty staff remains constant

	PHDA	ASPAN	ASPBN	ASPAT	ASPBT	ACP^{6}	ACP^{7+}	ACP	FP	UP	TOTAL
1982	15.80	6.17	3.71	9.21	40.30	28.64	86.94	4.70	24.61	33.70	253.78
1983	14.68	5.59	0.29	7.18	38.25	33.17	83.39	4.55	24.70	32.13	243.94
1984	15.92	7.00	0.06	6.18	35.17	27.24	35.54	58.61	25.01	29.94	237.68
1985	17.88	6.98	0.01	5.79	32.41	29.85	34.17	58.25	25.29	25.45	236.07
1986	19.09	6.65	0.00	5.69	29.81	31.89	33.49	57.59	25.70	23.24	232.16
1987	19.19	6.64	0.00	7.42	27.96	32.77	31.18	57.73	25.78	22.11	230.77
1988	19.09	6.66	0.00	9.12	26.28	33.02	29.53	57.76	26.45	20.86	228.76
1989	18.95	6.66	0.00	10.78	25.27	32.85	27.79	57.68	27.32	19.84	227.15
1990	18.99	6.65	0.00	12.22	24.66	32.35	26.48	57.63	28.48	18.28	225.74
1991	19.05	6.64	0.00	13.89	24.42	31.47	24.94	57.63	29.19	17.42	224.67
1992	19.09	6.64	0.00	15.12	24.54	30.91	23.28	57.63	29.25	17.30	223.77
1993	19.03	6.64	0.00	15.81	25.36	30.34	21.69	57.53	29.33	17.58	222.92
1994	19.04	6.64	0.00	16.14	26.40	29.71	20.57	57.63	20.30	17.09	222.53
1995	19.04	6.64	0.00	16.37	27.66	29.06	19.19	57.61	29.34	17.14	222.06
1996	19.03	6.64	0.00	16.60	29.11	28.62	17.40	57.53	29.38	17.14	221.44

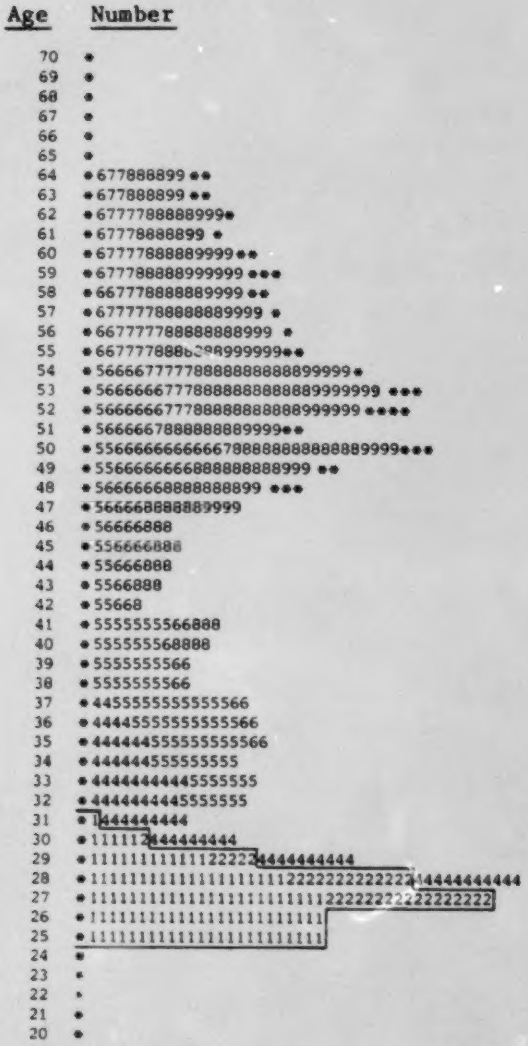
As mentioned before, we give only a rough idea about the kind of information that can be gathered. Based on the global information given here one might think that a policy as described is reasonable if a reduction in cost of, for example, 8% is prescribed.

However, many analyses have to be done to develop a promotion and recruitment policy that is acceptable. This can be illustrated by the age distribution that would result from the described policy (see Figure 3), which shows that a more sophisticated promotion and recruitment policy is required in order to create an acceptable age distribution.

Figure 3

Age Distribution of the Faculty Staff

Year: 1996



```
Age   Number

 70   *
 69   *
 68   *
 67   *
 66   *
 65   *
 64   *677888899 **
 63   *677888899 **
 62   *6777788888999*
 61   *67778888899 *
 60   *67777888889999**
 59   *677788888999999 ***
 58   *667778888889999 **
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 55   *6677778888888999999**
 54   *566667777788888888888899999*
 53   *56666666777888888888888889999999 ***
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 29   *111111111111222224444444444
 28   *111111111111111111112222222222222244444444444
 27   *11111111111111111111111122222222222222222
 26   *111111111111111111111111
 25   *111111111111111111111111
 24   *
 23   *
 22   *
 21   *
 20   *
```

1 figure is 3 staff members

Another difficulty is that even if a certain policy is acceptable on an aggregate basis, it might not at all be acceptable at the level of departments. Due to differences in tasks and different policies with respect to manpower problems in the past, the starting situation for departments can be so diverse that within the boundaries a more disaggregated approach is required.

In Table 10 the current distribution of staff is listed for two departments within the university that was "analyzed".

Table 10

Current Grade Distribution for Two Faculties

	PHDA	ASPAN	ASPBN	ASPAT	ASPBT	ACP^{6}	ACP^{7+}	ACP	FP	UP	TOTAL
University	11.0	3.7	1.7	5.1	18.3	11.7	30.6	1.7	7.4	8.7	100
Department A	45.5	-	-	6.0	7.0	4.5	23.0	-	9.5	4.5	100
Department B	12.3	4.3	-	5.7	25.4	12.3	16.6	-	5.8	17.4	100

Table 10 shows clearly that more detailed analyses are necessary. Similar problems arise if one considers different universities, as is illustrated in Table 11, where the starting distribution for three universities in the Netherlands are given.

Table 11

Distribution of the Current Grade Occupation for
Three Different Dutch Universities (U1, U2 and U3)

	PHDA	ASPAN	ASPBN	ASPAT	ASPBT	ACP^{6}	ACP^{7+}	ACP	FP	UP	TOTAL
U1	11.0	3.7	1.7	5.1	18.3	11.7	30.6	1.7	7.4	8.7	100
U2	2.7	5.6	-	8.2	18.7	32.5	11.4	-	8.8	12.1	100
U3	14.7	1.9	0.6	1.9	8.1	12.4	40.8	1.0	5.6	13.0	100

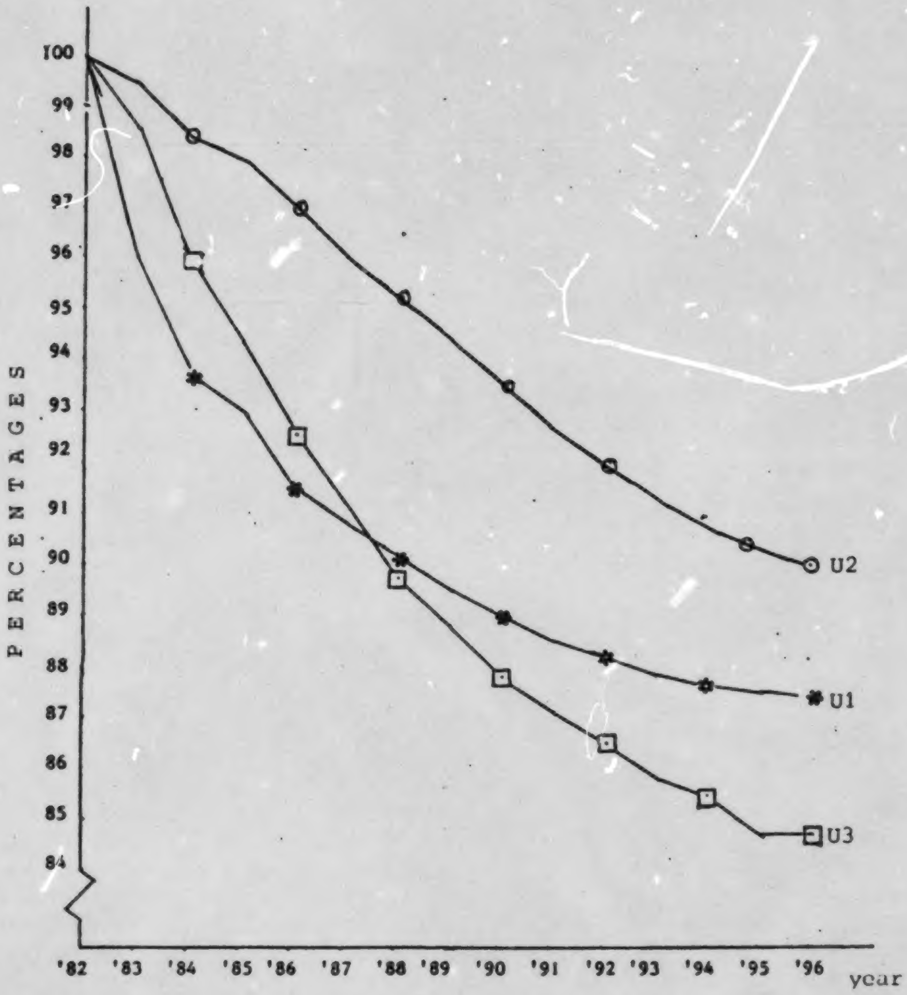
Figure 4 shows forecasts for the salary costs if the same recruitment and promotion policy is followed by all three universities for the alternative of a 5% staff reduction until 1986 and a constant number of faculty staff thereafter.

It should be clear that equal percent reductions in the budgets of the different universities will result in different recruitment and promotion policies.

If the government seeks a manpower policy that is "similar" for all universities, then such a policy might conflict with the financial constraints of individual universities.

Figure 4

Forecasts for the Salary Costs for Three Dutch Universities



(U1, U2, U3)
1982 - 100%
1982 - 1986 -5%-alternative
1986 - 1996 Total faculty staff remains constant

Conclusions and Comments

In this paper we did not attempt to solve the manpower planning problems within the Dutch university system. We merely tried to give a very rough idea of the kind of information that can be produced by the conversational computer package FORMASY. Only a very few of the options of the package are indicated. In fact, the available options can be divided into three categories:

- Options for producing information about the current and historical situation.
    - current grade occupation
    - age distribution
    - salary costs
    - past promotion policy
    - current career patterns
    - proportion of women in each grade
    - etc.
- Forecasting options for a given recruitment, retirement or promotion policy.
    - grade occupation over time
    - age distribution over time
    - development of salary costs
    - number of retirements in the coming years
    - required recruitment in the future
    - etc.
- Options for changing policies (in a conversational way).
    - changing recruitment policies
    - changing promotion percentages
    - changing salaries
    - changing retirement age
    - etc.

Such a flexible system is required for decision support with respect to manpower planning problems since often many qualitative aspects play an important role in the judgement as to whether a combination of possible changes lead to an acceptable overall policy. The decision-making process remains with the managers where it belongs. However, the possibility of evaluating alternatives with respect to aspects like age distribution, salary costs, recruitment, future grade occupation etc., helps managers to base their decisions on more solid information.

In addition, such evaluations might show where and to what extent governmental goals might be conflicting with each other.

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ADULT EDUCATION:
AN OVERVIEW AND SOME ASPECTS OF RESEARCH AT SHEFFIELD CITY POLYTECHNIC

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ADULT EDUCATION AND ADULT STUDENTS

It is particularly important to be clear about the terms being used when adult education is being discussed. In many parts of Europe, adult education has often been used to describe non-vocational or general education, generally of, say, one evening per week, with no entry qualifications, not leading to any recognised qualification and offered in the United Kingdom by a wide variety of agencies including the Workers Educational Association and the Extra-Mural or Adult Education Departments of universities and by adult education centres or institutes run by Local Education Authorities. Recent years have seen a developing interest in adult education but not only in this limited concept of adult education, important as it is and much as it has been affected by cuts in public expenditure. The interest has been in attracting adult students to normal university courses or to parts of them and in offering courses, often part-time ones, to meet the special needs of adults.

It is important to clarify what is meant by adult. The literature is confused when talking about the "adult" student. The large majority of students come to full-time university courses after leaving school or college at the age of 18. Although legally a person is adult at 18 he will be generally classified as adult in discussions about adult education only when he is either 21+ or 25+. The literature often does not make it clear which classification is being used. Again, the literature often does not make it clear if a study is concerned with the age of all students in courses (any student aged 18 on entry will obviously be over 21 on the completion of a 3 or 4 year degree course) or whether the age on entry to the course is the classification being used. Age on entry is the much more helpful classification.

Others regard a student as adult if he has had some break in full-time study, of whatever duration, before taking up the university course.

Care must also be taken to ensure that the mode of study is clear. Most universities in Europe concentrate on full-time course. The United Kingdom polytechnics have a large number of part-time students, in addition to those on full-time and sandwich courses. Universities have sought, or are seeking, to develop part-time degree courses. There is a lack of clarity in the literature when talking about adult students. In some cases the adult student is taken as a student taking a part-time course. In others, there is concentration on the adult student taking the normal full-time course. In others the mode of study is not identified and there is the danger that the needs, characteristics etc of the part-time student, irrespective of age, are not separated from the special factors concerning adult students. One very important area is that of continuing education or Professional, Industrial and Commercial Up-Dating

(PICKUP as it is referred to by the Department of Education and Science). This is a special area and, whilst of increasing significance to universities, is better dealt with separately. There are many areas of overlap, eg. an adult student requiring up-dating may take part of a university degree course on either a full-time or part-time basis but the factors being researched should be clearly identified.

Post-graduate courses are obviously taken entirely by adult students. This applies not only to courses of study and/or research leading to masters degrees and PhD's but also to post-graduate professional courses such as those for teachers (Post-graduate Certificate in Education), social workers and some paramedical staff.

Recent years have seen a considerable interest in the adult student for the following reasons (Lowe, 1981).

1. **Demographic Trends**

   In most European countries, USA and Canada, demographic trends show a considerable decrease in the number of school leavers in the next decade and beyond. Concerned for their own survival, universities have sought to consider how they might attract adult students to bolster their enrolments when, as anticipated, fewer 18 year old students are available. Whilst the demographic trends are known and cannot be disputed the interest in the adult student in the United Kingdon may not now be as great as it was a few years ago:

   (a) Government cuts in university funding are reducing the number of places available for full-time students. High levels of unemployment are making more potential students anxious to obtain a university place. Hence universities are becoming less persuaded of the need to develop their market to the adult student.

   (b) Adults have not been as willing to take university courses as many predicted. The reasons are not clear. It may be due to the financial arrangements such as high fees or the lack of availability of Paid Educational Leave (PEL) or it may be that people do not wish to be educated in the way that educationalists have envisaged.

2. **Structure of Labour Market and Availability of Employment**

   Both of these factors lead to an increasing demand for adult education. As the requirements of the labour market change and employment opportunities become less, there will be a greater demand for adult education. Adults who wish to become better prepared to take up the fewer available employment opportunities will turn to education. In addition to the vocationally related and motivated demand for adult education, there is also an increasing demand for more general education for those who have retired early or now have a shorter working week.

3. **Level of Public Expenditure Available for Higher Education**

   It is very likely that governments will make less money available for higher education. This will make it more difficult for students to obtain full-time higher education. The effect will be to increase the demand for part-time education. In England, the National Advisory Body for Local Authority Higher Education has made it clear that it does not wish to see any reduction in provision for part-time students in spite of the cuts in expenditure required by the Government in public sector higher education. Whether students come forward for part-time education in the United Kingdom in the numbers that the protagonists of adult education claim remains to be seen.

4. Public Attitudes to Higher Education

People have become disillusioned about the effects of the development of higher education. The economic progress and technological development which, it was argued, would follow from investment in higher education, have not been evident. Many sections of the public are no longer persuaded that, in times of economic stringency, so much money should be spent on providing university courses for the conventional student. There is a much greater emphasis on "the university as an open system" reacting more clearly to community needs and providing for a wider range of student, including a greater proportion of adult students.

5. Staff Attitudes

Staff attitudes are of vital importance. Staff in universities, recruited during the times of expansion, have a relatively low average age and most of their teaching has been related to the 18 - 21 year old university student. An increasing number are concerned to provide educational opportunities for the disadvantaged and see the adult student, for a variety of reasons, as a disadvantaged group. Even those who do share this view, or who do not react to it, find adult students stimulating, enjoyable and rewarding when they teach them, although they are more demanding and critical. Bailey and Johnston (1983b) have reported from a study of staff attitudes "The most common area of comment was to affirm the value and enjoyment of teaching mature students....."

This growing interest in adult education has led to an increasing number of workshops (Mercer and Thacker (1982)), conferences and studies and increased research into adult education. An institution will, if it can, now speak with pride of its high proportion of adult students. Table 1 shows the percentage of students enrolled in Sheffield City Polytechnic in Academic Year 1982-83 by age range and mode of study.

However, Lowe (1981) drew attention to a number of aspects, both at national and international levels, as being essential for meeting the demands of adults.

SOME AREAS OF RESEARCH

There are many issues related to adult education which have been or are being researched and others which need researching.

1. Need, Demand and Marketing

It is often asserted that there are thousands of adults who have been denied educational opportunities, or who have not taken up the opportu-

Table 1

Students enrolled in Sheffield City Polytechnic in Academic Year 1982-83 by age range and mode of study

	Mode of Study	Percentage in Age Range		
		18-20	21-24	25 and over
First year Enrolment	Full-time	55.4	23.3	22.2
	Sandwich	86.2	11.1	2.6
	Part-time day	19.2	37.5	43.3
	Part-time evening	3.8	18.6	77.6
All years	Full-time	49.2	30.7	21.1
	Sandwich	58.8	37.2	4.0
	Part-time day	16.3	39.0	44.7
	Part-time evening	2.0	14.6	83.4

Table 2

Prime Reason for Return to Study by Age and Sex (Bailey and Johnston)

	% all	Male	Female	21-24	25-29	30-34	35-39	40-59	60+
Subject Interest	38.0	30.0	46.0	18.4	14.7	43.8	55.0	72.7	100%
Vocational Interest	42.3	47.0	36.0	44.7	52.9	43.8	35.0	22.7	-
Others	18.9	23.0	18.0	36.8	32.4	12.6	10.0	4.5	-

nities provided, have the necessary abilities to complete successfully a course of higher education and are waiting for the universities to respond to their needs. Institutions developing courses for adults may spend a lot of time assessing the need and, in some cases, find that the response is very disappointing. Sheffield City Polytechnic developed an evening first degree course in humanities a few years ago but, after admitting only one intake of students, the course was discontinued due to lack of support.

Tables 2 and 3 give the results of a study carried out by Bailey and Johnston (1983a) to ascertain the prime reason for return to study and the relative importance attributed to reasons for enrolment. The study covered adult students taking full-time and part-time degree and non-degree courses in a wide range of subject areas.

It is often claimed that one of the barriers which prevents adult students taking a part-time course is the length of the course. They do not wish to commit themselves for such a long period during which their personal circumstances may change. There does, therefore, seem to be a need to provide intermediate qualifications with for example:

Certificate after 1 year of study
Diploma " 2 further years of study
Degree " 1 further year of study
Honours Degree " 1 further year of study

If universities are to develop courses for adult students or seek to encourage students to take existing or modified courses it is important to carry out further studies into why adult students enrol for the courses or, if at all possible, what are the barriers which prevent adult students enrolling.

2. Entry Qualifications

Whilst most institutions of higher education will take adult students, probably over 25, without the normal entry qualifications, comparatively few such students seem to enrol. Some staff would be reluctant to admit any student without the normal qualifications. Even those who do recognise the difficulty of students who have been away from study for some years adjusting to the demands of a course of higher education. Many studies have been carried out which show that students without the conventional entry qualifications perform at least as well as other students although most of the studies are in the areas of education, humanities and social sciences and not in science or engineering, for example, Nally, University of Geneva (1983). Nevertheless, whilst entry qualifications may not be relevant for mature students, some preparation for or introduction to study at the appropriate level is considered highly desirable by many people and it is unusual for an adult student to be admitted without taking some preparatory course of reading or other study. This can take various forms but all have the major aims of:

(a) developing study skills;
(b) building up the confidence of the potential students;
(c) helping the potential student assess the demands of a higher education course;
(d) giving practice in writing essays, etc.

Table 3

Relative Importance Attributed to Reasons for Enrolment
(Bailey and Johnston)

	Very Important %	Important %	Unimportant %
Improving Career Prospects	47 (34.3)	46 (33.6)	44 (32.1)
Changing Career	36 (26.3)	45 (32.8)	56 (40.9)
Developing Subject Interest	71 (51.8	53 (38.7)	13 (9.5)
Proving Something to Myself	36 (26.3)	52 (38.0)	49 (35.8)
To Become More Cultured/ Informed	33 (24.1)	62 (45.3)	42 (30.7)
To Qualify for Further Study	36 (26.3)	42 (30.7)	59 (43.1)
To Make Up for Lost Opportunities	27 (19.7)	37 (27.0)	73 (53.3)
To Make New Social Contacts	8 (5.8)	54 (39.4)	75 (54.7)
Others	18 (13.1)	4 (2.9)	-

Table 4

Comparison of First Year Withdrawals from Sheffield City Polytechnic in Relation to Age for Degree Students Graduating in 1977
(Toomey - 1981)

Age (Years)	Total Number	First Year Withdrawals	% Withdrawals
Up to 21	523	88	16.83
21-24	76	18	23.68
25+	24	2	8.33
Total	623	108	17.34

The courses can be of the following:

(i) Alternative Entry Course

In the United Kingdom, entry to a degree course normally requires two passes in the General Certificate of Education (GCE) Advanced level examinations. These examinations and the course of study are often considered less suitable for adult students and alternative GCE A level courses have been developed in a number of colleges and recognised as "equivalent" to GCE Advanced level by many universities and polytechnics.

(ii) Introductory Course

Whilst many universities are reluctant to develop non-degree courses, a preliminary or introductory course, which is a worthwhile experience in its own right, also fulfills the aims mentioned above. An example is a two year part-time Certificate in English Studies course at Sheffield City Polytechnic. This will provide admission to the degree course.

(iii) Associate Student Scheme

Many institutions of higher education in the Unived Kingdom have been reluctant to permit students to take units of courses. This possibility is now becoming more common and can fulfil the aims mentioned earlier. The associate student scheme at Hatfield Polytechnic came into effect in September 1976. Michaels (1979) reports that 85 associate students who enrolled in sessions 1976-77 and 1977-78:

20 withdrew during the course(s);
65 completed their course(s);
56 will receive Certificates of Associate Studentship having completed coursework assignments;
27 passed end-of-course(s) examinations;
31 continued their education beyond completion of course(s) as an associate student.

3. Credit Transfer

Adult students have difficulty in completing a course in the normal time taken by the school leaver:

(a) They often have other commitments such as family or work demands which means that they are unable to study full-time.

(b) Particular circumstances such as family demands may mean that they may wish to interrupt their study.

(c) Their job or that of their spouse may mean that they have to move from one part of the country to another.

In the United Kingdom study patterns have been much too rigid and a person moving to another area has often found it extremely difficult to continue a course of study. The development of adult education has meant that it has become essential to develop credit transfer systems so that students moving from one part of the country to another may continue their course at the new institution with appropriate recognition for courses/modules already completed. The recommendations of the report on the Educational Credit Transfer Feasibility Study, Toyne (1979), have now been accepted in the United Kingdom and are being implemented. Lowe (1981) suggests the possibility of credit transfer across countries, say, in North America or within the European Community.

4. Life and Work Experience

One of the factors often discussed about adult students is the previous experience. All adult students will have had some post-school experience - in industry, business, the armed forces, bringing up and caring for a family, or just being unemployed. Whilst a time away from study may have disadvantages the experience of adult students enables them to come with considerable advantages denied to the immediate post-school student.

The experience may be
(a) general, leading to a maturity, the ability to think across disciplinary boundaries and to concentrate on the important factors;
(b) specific, relating to the content of a particular course. Many examples could be given. The adult student who has worked in an engineering factory has obvious advantages over a young student studying engineering. A serving teacher has a wealth of experience on which to draw when talking about children and classroom organisation.

The importance of this experience has been studied, Abrahamsson, Kim and Rubenson (1982), in relation to
(a) its recognition as an entry qualification;
(b) its recognition for credit exemption.

If the length of a course of study is a barrier to access for adult students and if life and work experience is a valuable educational experience for which credit exemption can be given there needs to be a further study of the attitudes and success of adult students who have been given credit for those aspects of their life which are not regarded as providing standard educational qualifications.

5. Contribution of Adult Student

Adult students can obviously make a considerable contribution to their courses of study. This leads to two questions:

(i) Should separate courses of study be developed for adult students? Daniel (1982) has argued that there are three possible approaches, which he called peripheral, parallel and integrated, in seeking to meet the challenge of the adult population.

He advocated the integrated approach where adult students and conventional students were integrated on the same basis to the same programmes. Integrating all the students into the same programme has obvious economic advantage and it can be argued that each category of student benefits from the other. However, Roderick (1981) found tension between mature and conventional students. It is, however, difficult to see in the United Kingdom that full-time students could be persuaded that their classes should be held in the evenings. If the classes are held in the day, adult, working students would not be able to attend.

(ii) Should the course content be the same? A course designed specifically for adult students can make use of their post-school experience and build on life situations. For example it is often believed that an interdisciplinary course must start with a study of the basic disciplines. Whilst this may be acceptable to the conventional student, adult students often find the introductory disciplines boring and apparently irrelevant. Life experience rarely involves only one academic discipline. Two degree courses in Social Studies and Health Studies at Sheffield City Polytechnic have sought to start with interdisciplinary themes and in a discussion of these point to the need for knowledge of the relevant disciplines. The latter can then be developed not at the beginning but during the course with the interdisciplinarity being further developed in the later stages.

6. Adult Learning

Whilst some institutions have been providing educational opportunities for adult students for many years and whilst there has been much resarch into adult learning, for example Hopson and Scally (1980), educationalists often pay scant attention to this in developing programmes for adults. Whilst there is much to be learned from such studies, it is as vital to remember that each adult student may have his own characteristics as it is to remember the individuality of the conventional student. The adult student can also be expected to develop during the course of study.

7. Performance of Adult Student

There are a number of studies of adult students which show that they are much more likely to be successful than the conventional student, for example, Nally (1983).

However, two small unpublished studies at Sheffield City Polytechnic shown in Tables 4 and 5 show that students over 25 may be much more likely to complete a degree course than students in the 21-25 age range. The results merit much more detailed study and investigation. It might be that students over 25 have a very high motivation whereas those in the 21-25 age range have followed an erratic career pattern characterised by the lack of a strong internal or external direction.

There are many other areas (attendance patterns, place of day/weekend schools, distance learning systems, etc.) which are of vital importance in adult education.

Table 5

Comparison of Completion of Three-Year BA Social Science Degree in Relation to Age Range: 1974-81
(Gibbon - 1981)

			Age Range on Entry 18 - 20		Age Range on Entry+ 21 - 25		Age Range on Entry+ 26+	
Period	Total Cohort	Total Not* Completing	Number	Total Not* Completing	Number	Total Not* Completing	Number	Total Not* Completing
1974-77	56	12	41	7	10	5	5	0
1975-78	57	25	37	15	16	9	4	1
1976-79	49	17	36	13	7	2	6	2
1977-80	53	9	35	4	9	2	9	3
1978-81	73	16	44	6	14	5	15	5
Number	288	79	193	45	56	23	39	11
Percentage		27.43		23.31		41.07		28.21

* "Not Completing" includes all withdrawals, transfers out and failures.

+ N.B. The age chosen by Gibbon was 26.

CONCLUSION

Recent years have seen a developing interest in adult education, in the admission of adult students to full-time programmes and in the development of part time study programmes to meet the special needs of adult students. This interest will continue as a result of societal and political pressure as well as the demands of the adult population. Institutions have already had considerable experience and the aspects mentioned by Lowe (1981) will become of increasing significance. It is vital that existing and future experience is researched within institutions to provide information that gives practical support to institutional planning, policy formulation, decision making and development.

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ADULT STUDENTS IN HIGHER EDUCATION: SOME ISSUES FROM WITHIN THE BRITISH CONTEXT

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Introduction

In comparison with many other countries the people of England and Wales are under-educated; they leave school earlier, pass fewer school-level examinations and fewer of them continue in any form of post-school education than their counterparts in other developed countries (ACACE, 1982a, p. 7). In a recent market research survey (ACACE, 1982a, p. 10) it was found that only one third of a stratified random sample of people interviewed had stayed at school beyond the statutory leaving age applicable at the time. In spite of this (or because of this?), and contrary to the received wisdom among adult educators, it appears that the general desire for learning is a feature of adult life which transcends age, class and sex differences (ACACE, 1982a, p. 73). There is a strong desire both for structured courses and for developing new interests. Adults are interested both in acquiring practically orientated skills and in exploring cultural interests and the creative arts. There are not two or three different populations which divide along subject or interest lines. Rather, adults are interested in a range of learning opportunities which they choose to pursue at any one time depending on particular social, familial and economic circumstances (ACACE, 1982a, p. 82). There is considerable evidence to suggest that whether or not adults participate in continuing education activities is not so much a matter of choice as an individual's ability to overcome a number of barriers to access (ACACE, 1982a, p. 83).

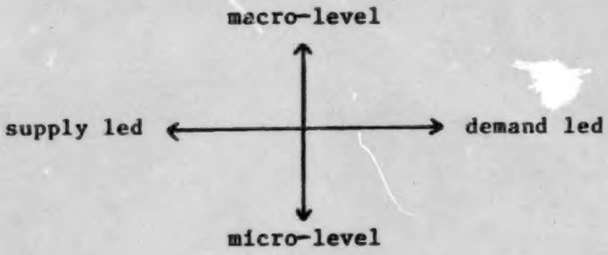
1. Top Down Change

So far I have cited evidence from my country. What are the issues of more general interest? I have chosen to focus on three aspects:

1. Top-down change
2. Demand
3. Barriers to access.

Obviously these issues overlap and interrelate, but for the purposes of this paper I intend to try to separate them out.

I find this two by two matrix helpful for discussion purposes:



The macro-level may represent the national, policy level while the micro-level may represent the educational services/learning available to the student. On the supply side at national policy level the funding of High Education in Mr. Reagan's United States and Mrs. Thatcher's Britain is likely to be different from that of Mr. Mitterand's France. The arguments and rhetoric of legitimation are likely to be couched in terms of economic efficiency in the former (Cuthbert, 1982; MSC., 1983; Small and Mercer, forthcoming) and in terms of equity in the latter (Cervel, 1983), at least for the 'true believers'. In practice, in the world of national politics, at intermediary levels of decision-making and resourcing and in the institutions themselves, there is an interplay between arguments of economic efficiency and those of equities (Lowe, 1981; Timmerman, 1983). In the United Kingdom, for example, this is highlighted and dramatised by the distinction betwen the values and provision of the Manpower Services Commission (with its emphasis on training, centralised control and short term objectives) and of the Department of Education and Science (with its emphasis on education, decentralised provision through local education authorities, and more diffuse aims) (See Small, 1983, a and b).

In the United Kingdom Fowler (1982) identifies a number of reasons why the move from a front end model may well be difficult and slow:

i Central Government has a poor record of imposing change on the system, except either by addition to it (the creation of the polytechnics etc), or where it or its agencies or local government is/are the sole employer (the foundation of new medical schools, the contraction of teacher education), or where it has provided a positive financial incentive to change.

ii The internal politics of institutions, where power normally resides with elites based on existing structure, inhibits change.

iii The system of academic tenure and the absence of any comprehensive exchange/retraining facilities, stemming from the independence of each institution of higher education, frustrate the redeployment of staff.

iv The diffusion of power between several levels of control in the British Higher Education system has a conservative effect because of the tension between several organs of control.

v The links of the academic community, and especially that in universities, with Whitehall and the political parties also favour conservatism in the development of the higher education system, although the higher education lobby is now weak by comparison with the 1960's.

vi 'Academic drift' blunts the edge of innovatory schemes, of which the best example in recent years is the failure of the Colleges of Higher Education to develop a character other than that of mini-universities.

vii Economic recession and tight control of public expenditure restrict the introduction of innovatory schemes which are initially expensive: resource-based learning, distance learning, etc. If the Open University had not been founded in 1969, it is likely that it would never have been founded at all.

viii The autonomy of individual institutions and the autonomy of the teacher... also inhibit innovation - such as the spread of credit transfer, the supplementation of examinations by student transcripts or the collective development and use of resource-based learning materials, and hence both the optimisation of resource use throughout the system and a shift in the age pattern in favour of adults.

In France, with its long-established traditions of a centralised education system (including that of the university), Cervel (1983) notes that even with considerable political will top-down policies for opening up higher education to adults are subject to a variety of difficulties when it comes to putting them into practice (and this leaves out altogether the question of unintended consequences):

i Many aspects of administration have since 1981 been decentralised to the regions (which have their own regional budgets).

ii The regional budgets for continuing vocational education (and under the terms of the 1983 Bill non-vocational general continuing education as well) are negotiated by a tripartite council consisting of representatives of the state, of employees, and of unions. The union representatives tend to be concerned about the provision of lower level short courses rather than award-bearing courses in higher education.

iii Financial support is now available to individual workers to have paid educational leave for up to the equivalent of one year. French companies have, by law, to contribute a payroll tax of 1.1% for the training of their employees: of this amount ten percent, i.e. 0.11% of their salary bill must be made available to workers on an individual demand basis.

Cervel (1983) goes on to note, on the positive side, and following on from the previous point, that what has been created is a market place for education and training in which institutions - both state and private (profit-making) institutions - compete for clients. As such it provides a pressure for change and innovation. The same may well be the case in the UK, in the USA and in other countries.

In the United States there is evidence from the schools sector that federal funded educational programmes do not produce consistent and widespread effects at the grassroots. Rather, where success can be assessed, it is in terms of appropriate mutations brought about by what Berman (1980, 1981) calls adaptive implementation processes. Similar processes may well be at work here.

2. Demand

In this section I look briefly at the position in Sweden and in the United States before focussing on the situation in England and Wales.

In Sweden the process of "adultification" of the system of higher education started in the early seventies before the 1977 reform and before the introduction of the 25:4 scheme which opened up higher education to those over twenty-five. Wagner (1983), referring to the "graying" of American universities, notes that the demand from adults is ahead of policies, initiatives and institutions.

Slowey (1983, p. 2) writes:

> In the academic year 1980-81 there were 124,218 students aged 25 or over attending advanced courses ... in UK universities and public sector colleges in England and Wales... To this must be added about 60,000 students taking degree courses by correspondence from the Open University. Mature students aged 25 or over constituted 21% of all students in universities, polytechnics and other colleges of further education.

It is important to note, however, that these figures obscure the fact that the pattern at conventional universities is very different from other colleges providing higher education: for example at Sheffield University and at Sheffield City Polytechnic in the 1978-79 session 5.3% of the 5,838 full-time students at the university and 51.3% of the 5,583 full-time students at the Polytechnic were on entry aged 21 or over (Roderick, Bell, Dickinson, Turner and Wellings, 1981, pp. 200 and 283). It is within this context that Roderick (1983, p. 24) comments, with regard to the demand for full-time places for undergraduate courses in conventional universities:

> 1. The demand for university places from both conventional and mature students has continued to rise over recent years leading to a 30 percent overall increase in applications over the period 1974-80.
>
> 2. The rate of increase from mature students and especially from older mature students and women students has been greater than that from conventional students.
>
> 3. In 1980 applications from mature students fell for the first time in a number of years and the rate of increase in applications over the years 1977-80 was very much less than during 1974-80. This no doubt reflects changed economic circumstances...
>
> 4. In any one year demand for places fall off rapidly with age.

2.1 Full-time Studies

The comment that needs to be made here is that in the UK higher education is still largely conceived in terms of conventional full-time study, for conventional direct-from-school students who take conventional three year degrees. Even where other modes of teaching/learning are used the methods of accounting are in terms of 'full-time equivalent' students. There is similar evidence from Canada (Pichetto, 1981) and the United States (Feinstein, 1981) while in the Federal Republic of Germany the assumption is that higher education students are full-time students and that the maximum age of entry to higher education studies is 30 (Timmerman, 1983). In France, Cervel (1983) reports that there are 'difficulties in identifying adults enrolled in regular programmes'.

2.2 Part-time Studies

Table 1 shows that a higher proportion of mature students are part-time students than younger students. When the Open University figures are added to these then the proportion of mature students in part-time higher education rises to 71%.

Table 1

Mode of study of students on advanced courses in Universities (United Kingdom), Polytechnics and other public sector colleges (England and Wales) 1980-81

Mode of Study	Under 25 %	25+ %	Total %
Full-time	82	43	74
Part-time	18	57	26
Total number	475,418	124,218	599,636

Source: Slowey (1983, p. 3)

In the United Kingdom there are inequalities in funding full-time and part-time students with full-time studies attracting relatively generous mandatory grants and part-time studies discretionary grants. Research by Roderick et al (1981) would seem to indicate that mature students manage to obtain financial support using a system that was designed for conventional direct-from-school students.

2.3 Other Issues

There are numerous other issues which are important but which are only mentioned briefly.

(a) Women in UK Higher Education (1980-81)

36% of students over 25 were female: for all students the figure is 37% (Slowey, 1983, p. 3).

(b) Social Class of Mature Students

Table 2 below indicates that the majority of mature students come from the Registrar General's categories I and II and that people from categories III manual and IV are under-represented.

Table 2

Social Class of Mature Students (25+) in Higher Education
in England and Wales (1980-81)
(Mature Students' Research Project Survey Data, Percentages)

Registrar General's Categories	Polytechnics	Other Colleges	Universities	Open University
I and II	72	65	64	74
II and III non-manual	18	20	22	16
III and IV	10	15	14	10

Source: Slowey (1983, p. 11)

(c) Marginality of Mature Student Provision in Higher Education

Daniel (1982) makes a useful distinction between integrated, parallel and peripheral provisions for adults. He argues that while peripheral and parallel provision may be attractive in the short run, in the longer term integrated provision is essential.

(d) Support Services

Pelletier (1982), writing on his experience in Quebec, notes that higher education institutions have considerable experience of providing support services for conventioanl direct-from-school students but much less experience at providing the kinds of support needed by a heterogeneous body of mature students at work, with families, and at different stages of their working life, unemployed, etc.

3. Barriers to Access

A recent report which examines the best ways to develop continuing education in the 1980's and 1990's identifies as recurrent themes the need to:

- Recognise that continuing education occurs in many contexts.
- Co-ordinate its provision locally and nationally with agreed priorities.
- Revise the present inappropriate priorities embodied in the division between vocational and non-vocational education.
- Provide a network of accessible local education centres designed for use by adults.
- Develop new modes of learning.
- Introduce greater flexibility of staffing of institutions.
- Provide regular programmes for staff training and development. (ACACE, 1982b, P. 5)

The report notes in Chapter 4 various barriers to access.

3.1 Attitudes to Education

"The major unstated barrier to access is probably the attitude which assumes that education is only for the young as a preparation for adult life." (ACACE, 1982b, p. 66). This comment applies not to adult learners and potential learners but also, and with particular force, to civil servants, politicians, decision makers, and teachers and administrators inside the higher education institutions.

3.2 Information on Available Opportunities

When accurate, up-to-date, local and comprehensive information is collated, accessible and to hand when, where and in the form it is needed, people are more likely to take advantage of the opportunities available: in Toronto where Metrodoc has since the late 1960's offered a city-wide listing of learning opportunities for adults this itself has promoted demand (Bertelsen, 1977). In the United Kingdom the 'ad hoc' development of Educational Guidance Services of Adults (17 services in 1979; 49 services in 1983) in different parts of the country demonstrates this need (ACACE, 1979 and 1983; Butler, McGowan, Mercer and Patterson, 1983 and Mercer, 1981). In 1982 a National Association for Educational Guidance Services was established. Recent major initiatives by the Manpower Services Commission have also stressed the need for and importance of local information services (MSC, 1981, 1982 and 1983).

3.3 Geographical Barriers

Wagner (1983) argues that the growth of numbers and proportion of adults studying both degree-credit courses and non-credit courses in the United States is due at least in part to the development in the last decade of two and four year colleges within travelling distance. In the United Kingdom Bethel (1981) makes the point that adult students at Leicester Polytechnic live within an hour's travelling distance, while Johnston (1983, p. 14) finds that at Sheffield City Polytechnic 70% of mature students live within a 10 mile radius of the polytechnic, and 58% of all mature students have a journey lasting less than half an hour each way.

3.4 Financial Barriers

At present financial help for students is unsystematic and unequal in its provision; and many adults have been and continue to be debarred from taking up educational opportunities for financial reasons.

The financial structure of a continuing education system is inevitably complex and can be looked at from three closely related perspectives:

- financial support for learners;
- financial support for institutions;
- and the connecting link of fee payments by students to institutions (ACACE, 1982b, p.22)

Wagner (1981) identifies five policy options:

1. Revisions in financing through institutions.
2. Revisions in financing through students.
3. Revisions in financing through private sources.
4. Revisions in tax policies.
5. Revisions in admissions policies.

Taking the first four of these points, much of government funding in the UK is direct to higher education institutions: how much of that money finds its way to adult students is more a matter of tradition and chance than of clearly established policies. With regard to the second, conventional full-time students are relatively favoured with mandatory grants. I regard this as a crucial issue. There is evidence of support for the idea of the right to an education entitlement for adults among the general public (ACACE, 1982a) and among political parties (Labour Party, 1982; Social Democratic Party, no date; and it fits in with the Conservative Party notion of educational vouchers). It also has the support of some academics (Crick, 1982; Fulton, 1981; Gould, 1982). Third, financing through private sources is an option which appeals to the British government. How far it is used and how far it will be helpful to mature students remains to be seen. The fourth policy option, of working through tax policies, does not seem to have been seriously considered in the UK. A possible disadvantage is that they tend to favour taxpayers, wealthier and better educated people.

3.5 **Structural Barriers**

In the UK undergraduate bachelor courses typically last three years and are undertaken full time. The assumption is that all (or most) of those who are selected will complete the course and gain the qualification. The point I am making is that these course are not modular and are not credit-based. Credit-based modular courses like Open University courses provide the degree of flexibility which adults need.

Toyne (1979) identified the need for educational credit transfer arrangements both at national and local levels. The need is becoming increasingly pressing. At last a national pilot project has been set up - the Educational Counselling and Credit Transfer Information Service (ECCTIS).

Another structural barrier to adult access is the entrenched position of the secondary school leaving examination (General Certificate of Education - Advanced level) and the lack of widely acceptable and available alternative adult-appropriate credentials (Butler, 1981). This issue of accredition is important and we lack a British equivalent of the New York Regents Board. Evans (1983) can find no examples of good practice among institutions in Britain in systematically giving credit for prior life experience.

On a more positive note the 'Open Tech' (MSC, 1982), which although aimed at Technician level, may well have an impact on higher education. The 'Open Tech' aims for effective availability, to overcome barriers, to be learner-centred, problem-centred, learning-centred, to complement existing provision, and where appropriate to use distance learning methods.

4. **The Way Ahead**

I had thought that legislation was necessary to bring about a more effective and equitable system of continuing education. This is the line of argument of Lowe (1981) and ACACE (1982b, Chapter 12). However in the light of the situation in the United States and in Sweden, I am less sure. Certainly it would help if there was legislation which gave people the right to an educational entitlement. I am not sure, however, legislation is possible, or if possible, would be very effective in the United Kingdom.

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PRIVATE SUPPORT FOR HIGHER EDUCATION: A COMPARATIVE ANALYSIS OF THE UNITED SATES AND EUROPE

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There is an academic axiom used when speaking of the natural divisions of university labor, that the administrators "in the front office" should worry about raising money and the faculty should spend it.[1] Ideally, perhaps, that is the way it should be. Nevertheless one must look beyond the hierarchy of the university when seeking sources of income.

In general, there are four income sources on which most institutions rely in varying degrees: charges to students and other users of facilities, governmental appropriations, philanthropic contributions, and borrowing. Some universities also operate profitable commercial enterprises to augment their funds.

Although financing of higher education is a huge worldwide enterprise involving several hundred billions of dollars, it amounts to a relatively small fraction of the gross national product of most countries. This portion of the GNP ranges from a fraction of 1 percent in many countries, like the Federal Republic of Germany, to a high of about 3 percent of the United States' GNP of $3,059.3 billion for 1982.[2] Therefore, a relatively small portion of the world's wealth goes to higher education.

The Need for Private Support

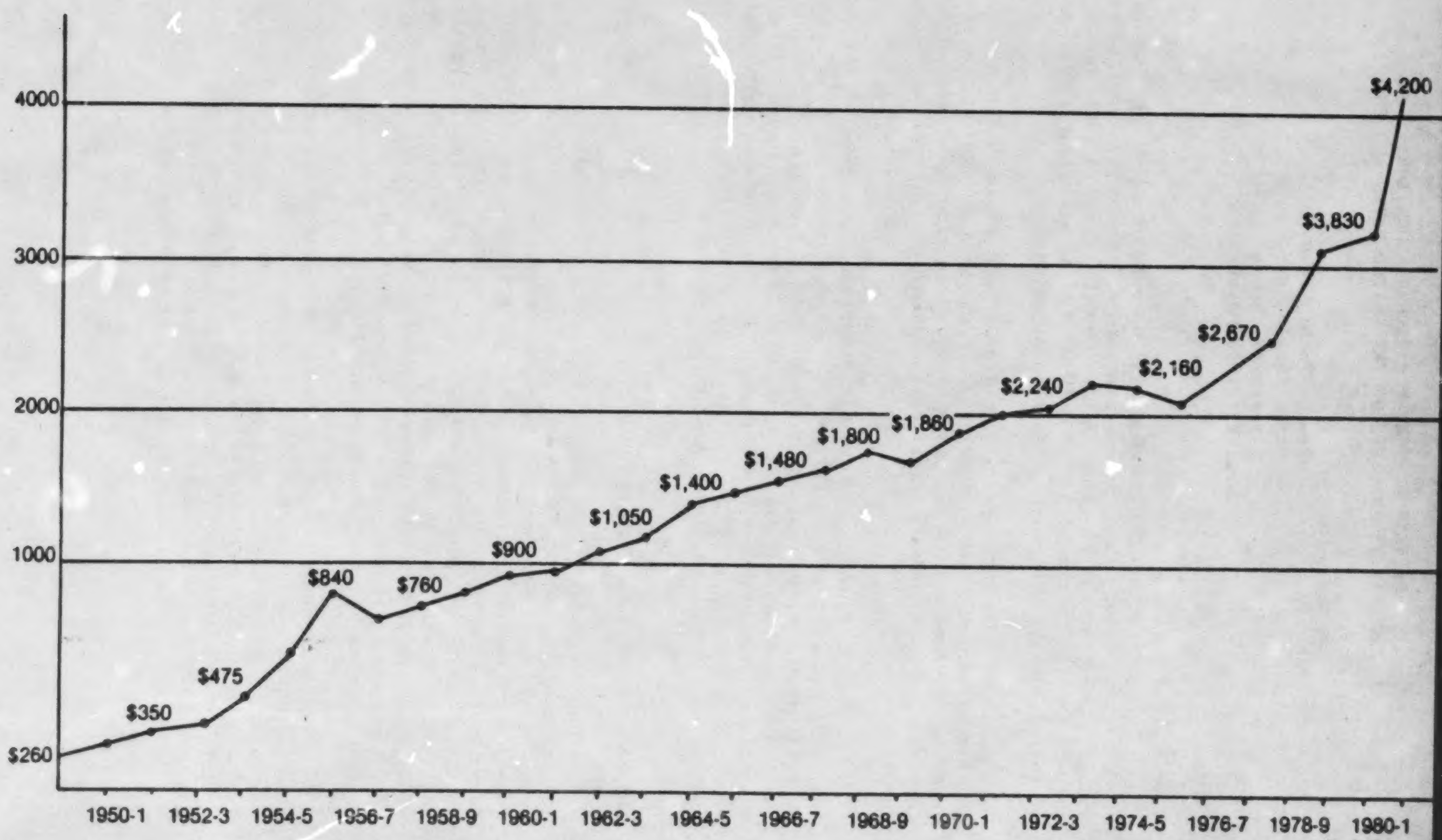
Why does higher education need more money? Quite frankly, our colleges and universities are in financial trouble. The educational aspirations of our young people have been rising, hence the increase in college enrollment. The demand for greater specialization has necessitated an addition of many unique departments. Laboratory and equipment costs are staggering, not to mention the increased costs of basic necessities such as utilities and maintenance. In addition, academic and support salaries need to be raised all too frequently. Finally, physical facilities have reached advanced decay stages on many university campuses. It is simply vital that financial support to institutes of higher learning be increased substantially.

Since an undue burden on the students is undesirable, it is essential that normal two sources of income be augmented. Additional government support has proved ineffective at resolving the dilemma faced by colleges and universities. Undoubtedly there are political forces at work slowing down the rate of governmental financing of higher eduction. Hence, in lieu of government funding the more lucrative source to be tapped would be from the private sector which includes alumni, wealthy patrons, private foundations and business corporations.

FIGURE I

31 YEARS OF GIVING TO HIGHER EDUCATION

(Millions of Dollars)



SOURCE: The Chronicle of Higher Education, May 26, 1982

The external problem for higher education is how to attract and maintain support from the principal sources of philanthropic contributions, i.e. What kinds of services by colleges and universities attract financial support? What kinds of circumstances encourage alumni and patrons to offer gifts and what kinds of circumstances repel them? Although it is probably true that each nation arrives at its own mix of private and public support for higher education based upon its own educational tradition, societal mores, tax incentives, goals and financial resources, it would be valuable to examine the factors which influence philanthropy in the United States.

Private Support for Education: The United States Model

Philanthropy is a personal preference, yet there are several factors in the environment which affect philanthropic societies. In the United States, philanthropy has expanded in a political system decidedly favorable to its growth. In most fields, outside of politics and economics, philanthropy has led in founding institutions later emulated by government. The private donor has always played a far greater role in the United States than anywhere else in the world due to the fact that philanthropy flourishes where personal initiative is broadest.[3] The individual donor was responsible for the founding of some of the United States' leading universities and has continued to contribute generously to the physical expansion and current operations of many hundreds of colleges and universities. Moreover, there are few ceilings on gifts; businesses are legally allowed to make contributions, and individuals enjoy tax benefits from giving. At the same time, philanthropy has an enormous stake in the capitalist economy, precisely because capitalism is the economic aspect of individualism.[4] During half a century, men like Peabody, Vassar, Rockefeller, Carnegie, Eastman and others, decided each for himself, about his gifts of philanthropy. As Figure I illustrates, during a span of 31 years, contributions to higher education rose from $2.6 billion in 1950-51 to $4.2 billion in 1980-81.

The Roots of Philanthropy in the United States

The motives which have led people to fund and to carry on philanthropic societies vary by religion, nationality and economic level. From early Hebrew times through the long development of Occidental civilization, religion has been the seed from which grew nearly all the organizations in philanthropy. Institutions of higher education have been the second largest beneficiaries of philanthropic support. Evidence in its support can be traced back to Plato who bequeathed his Academy to his successors. Likewise, the Ptolemies created a foundation for the libraries and research at Alexandria.[5]

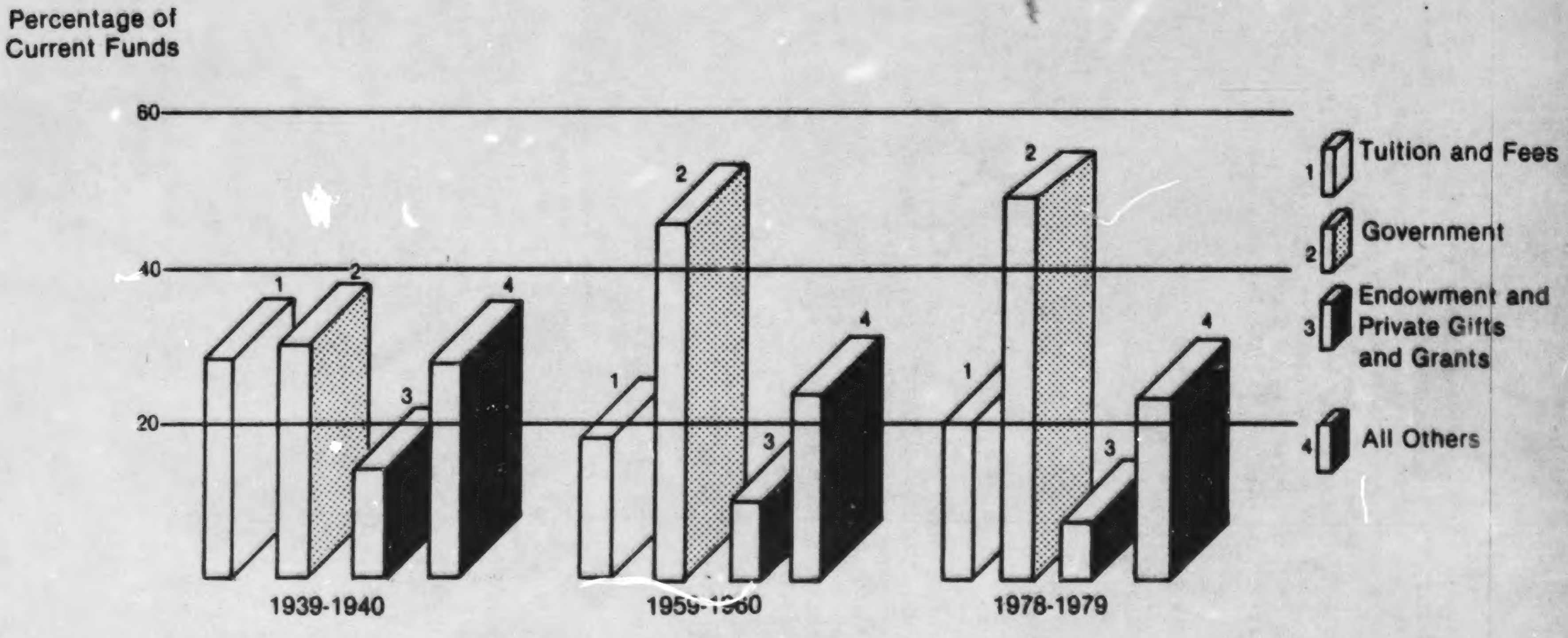
In the United States, philanthropy toward higher education has more closely followed the Greek and Roman concepts; it consists of kindly acts or generosity "toward people" not toward the poor. It is not charity, rather the purpose of the endowments is for every person, regardless of economic level, to derive benefit from them.

The Role of the Foundation

Legally, the modern foundation in America is the lineal descendant of the charitable trust-fund provisions and practices in England. Since the nation-state emerged as the dominant institution of western civilization, the

Figure II

FUND INCOME OF INSTITUTIONS OF HIGHER EDUCATION



SOURCE: 1981-82 FACT BOOK Demographic and Economic Data establishment of a foundation has been a joint public and private venture. In essence, the foundation is a legal device for perpetuating private will for public purposes.

Historically, one of the chief concepts distinguishing the American foundation from it's European counterpart is "the prevention of the ills of mankind rather than palliation".[6] Foundations in the United States consider their primary function as that of providing the capital for worthwhile projects that cannot be financed from other sources. Therefore, when it comes to philanthropy and education, this function can be divided into two categories:

1) philanthropic and educational functions which communities have come to accept as necessary in the public administration of a modern state;

2) philanthropic and educational functions which communities consider desirable, but because of their nature are deemed not necessary or unsuitable for state intervention.[7]

Even though, endowments and private support are less than 20% of the total income of institution of higher education (See Figure II) they are nonetheless supplemental income for funding certain activities which are excluded from State appropriation budgets. As a result, foundations have provided a large portion of total voluntary support to higher education - 23.8 percent in 1979-80 - second only to alumni contributions which were 23.9 percent for the same year.[8]

Currently there are approximately 28,000 foundations operating in the United States.[9] They and the laws that permit their creation, are desirable and should be encouraged. Foundations exert a significant influence in ushering changes in our form of society and play a role in directing the course of education in America, the importance of which can hardly be exaggerated.

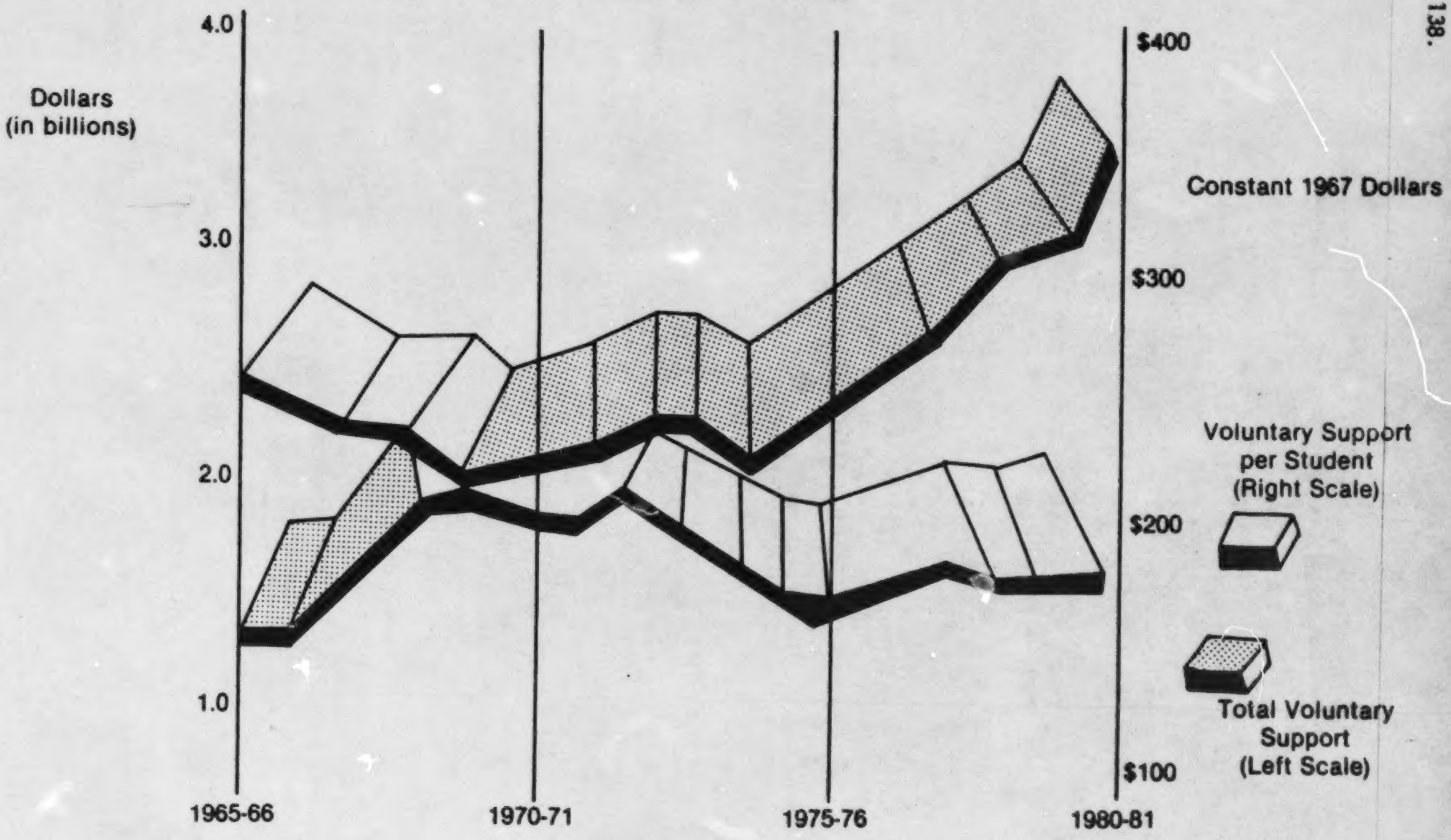
Proportions of Private Support

The total voluntary support of higher education for 1979-80 amounted to \$3.8 billion which steadily rose from \$1.45 billion in 1966-67.[10] Figure III graphically depicts this steep rise in total voluntary support. Such a significant increase in contributions indicates that there must be some powerful incentives to individuals, corporations, and others, to support higher education. Then again, some donors give out of the goodness of their hearts without expecting any compensation. To cite an example, in 1974, United States unemployment reached a peak as automobile plants closed and other industries slowed production. Gifts and securities fell off in value. In such adverse financial conditions, the middle-income donor increased his giving, perhaps in recognition of rising needs of those less fortunate. Corporate giving increased sharply to an estimated \$1.17 billion for 1974. Foundations, in spite of a 30 percent drop in assets over the 1974-75 period, increased their payout by 5.5 percent in 1974 to \$2.11 billion. Nevertheless, the portion received by higher education for the same period, remained unchanged at \$3.72 billion, even with inflated costs for operations and basic items.[11] Thus, it cannot be overemphasized as to why we seek the support of the private sector in higher education. It should be pointed out that even in a country where giving is

FIGURE III

VOLUNTARY SUPPORT OF INSTITUTIONS OF HIGHER EDUCATION

1965-66 - - - - 1979-80



SOURCE: 1981-82 FACT BOOK Demographic and Economic Data ingrained in our culture, business corporations and individuals have to be coaxed to contribute to a cause.

Ways to Attract the Private Donor

The major task in promoting giving is to attract private money while at the same time exercising care so as to refrain from alienating persons or groups of varied points of view. Donors are often turned away from contributing if they are unclear about the financial status of an institution or the precise usage of funds. With a focus on clarity, colleges and universities that are seeking philanthropic support should specify their financial position and state their needs to private donors.

Involvement of Faculty and Students

It is not enough that administrative officers should seek philanthropic support: faculty and students can and should solicit support as well. Involved alumni are likely to be interested in the faculty members under whom they studied. Therefore, if alumni are encouraged by the attitudes of the current generation of students, they will be more likely to make donations to that institution.

Tax Incentives

Perhaps the greatest incentive to donors, corporate, as well as individual, is that of tax deductions provided by state and the federal governments. The government at all levels encourages gifts to educational, religious, and research organizations. In most instances the agencies and institutions aided are performing a useful function which, directly or indirectly, reduces government expenditures. For the individual, the opportunity is offered to give a self-selected charity a considerable sum of money, much of which would otherwise be absorbed by the Internal Revenue Service. The chief tax savings for individual donors with respect to gifts is on personal income tax. In general, gifts to charitable and educational organizations are deductible up to 50 percent of the contribution base.[12] In addition, a relatively new form of tax deduction enables people to deduct from their taxes rather than from their pretax income. Several states in the United States already provide tax credits for donations to higher education. The existing evidence suggests that it creates a strong stimulus for donations.

Motives for Corporate Contributions

In the United States, corporate contributions are tax deductible up to a specific portion of net income with certain exclusions.[13] Moreover, large tax savings can be achieved by giving securities, real estate, or other property which has increased in value while in the donor's possession. The savings result from the fact that the donor may take credit for the gift at its appreciated value. With such potent tax savings, corporate donors are strongly compelled to make gifts to institutions of higher education.

Private and corporate funds are sometimes provided to an institution for specific and particular purposes. These gifts may be employed for purposes otherwise financed by unrestricted funds. These gifts become, in effect, additional general institutional support.

In addition to providing operating assistance of a general or categorical nature, donors often provide physical construction assistance to institutions of higher education in various forms. For example, it might include the addition of a new engineering building named after the donor or the renovation of a older edifice, or it may even consist of adding some facility for the handicapped, thereby enhancing the societal image of the donor. In other instances research equipment is given when such equipment can serve both the donor and the university.

Dollars are but a part of the contribution made by businesses and industry to our colleges and universities; gifts -- in kind - such as equipment or executive time, donated to an institution, may be worth many times the dollar amount shown on the tax return.

Hence, it is quite understandable why American corporations have been good friends of higher education. In 1978-79, business support alone exceeded $438 million.[14] The corporate viewpoint regards donations as making profitable investments into the future. The record shows that American colleges and universities graduate the largest number of what will be our country's educated manpower; they further produce the largest number of graduates within fields in high demand by private enterprises, i.e. business and management, physical and biological sciences. Finally, colleges and universities have built up an extraordinary reservoir of leadership for American businesses.[15]

Uses and Management of Private Funds

In the same manner that private and public higher education are valuable resources for the corporate community, conversely, college administrators prefer corporate contributions over federal aid because fewer strings are attached to the funds. Each needs and deserves the support of the other. As pointed out by John Opel, IBM President, "The return ... is often difficult to quantify, but the bottom line is the same as that for any business venture, it contributes to our success".[16]

Once colleges and universities receive gifts, it is beneficial to the institutions to get the best possible results from wise handling of their investments. In most instances it is possible to invest the endowments in real estate, securities or stocks. For example, Wesleyan University in the United States, has invested about $10 million of its $123 million endowment fund with a New York hedge fund. Likewise, the Case Western Reserve University in Cleveland, Ohio, has decided to put about 9 percent of its $138 million fund in a melange of venture capital projects, a small interest in the arbitrage arm of a brokerage firm, an international fund, real estate, and a fund that invests in smaller, fast-growing companies in northeastern Ohio. Bryn Mawr College has invested $4 million of its $50 million endowment with a Geneva based foreign securities fund. Yale University was a little more adventurous; it has earmarked as much as 10 percent of its $750 million endowment for real estate.[17] Schools that typically had a buy-and-hold approach regarding endowment funds are now pressured by rising costs to turn to livelier, more profitable prospects. Much of the demand for increased investment performance of higher education funds in the United States has been the result of devastating federal cutbacks and declining state government support.

Comparison of Private Funding Trends in the United States and Europe

In Socialist countries, developing nations, and much of Western Europe, higher education is financed through budgetary appropriations from federal, state and local governments. The United States is unusual in that respect, it has a high proportion of privately financed colleges and universities that only receive a small portion of their total revenues from public sources. Private universities in the United States greatly depend on student fees, whereas in other countries, such fees provide only 10 to 15 percent of the operating capital of public institutions.[18] Virtually all institutional support is provided by public sources made available through government appropriations, hence students attain higher education without fee.[19]

Status of Higher Education and Philanthropy in Europe

In spite of the tax deduction incentive available in the majority of Western nations, the private sector is not tempted to make contributions to charitable institutions. Such indifference on the part of individuals and businesses is attributed to the prevailing opinion that the State should care for the needs of society.

In France, for instance, sufficient tax deductions are available for contributing to charitable and educational institutions, yet, private donors refuse to take advantage of them because the State appropriates over $500 million for education. Foundations in France are few and poorly endowed. Their juridicial status is all the more developed and subtle as they are not specifically defined by law.[20] Likewise, in Italy, no explicit laws exist for the establishment of foundations; they are often lumped with associations. It may obtain juridical independence and legal status only through a grant of a Presidential decree, usually a long and laborious process. Consequently, many foundations begin de facto operations while awaiting recognition.[21] A similar pattern can be witnessed in virtually every country of Western Europe. Apparently there is public mistrust for foundations' misuse of funds. Thus the intervention of authorities in the life of a foundation beyond the initial set-up is not unlikely, and rather expected, in most European countries.

Status of the European Foundation

Although the largest number of foundations in Italy are in the educational sector, their endowments have suffered the most from devaluation and monetary influction. Similarly, in other neighboring countries, individuals are being dissuaded from donating due to diminishing personal fortunes and monetary erosion. The large sums of money often required for establishing a foundation are further making this worthwhile type of organization less feasible. Moreover, businesses and corporations suffering from a lagging economy cannot find significant justification in making contributions to institutions of higher education, particularly where their history of involvement is different from their counterparts in the United States. As a result, foundations are only apparently efficacious due to a lack of resources to function well. In short, inflationary trends have necessitated the government take-over of activities customarily performed by foundations.[23]

The Need for Private Support

There is no denial that in some countries the government is doing an excellent job of financing colleges and universities, yet in many nations severe shortages exist. In addition, future prospects suggest that public funding for higher education will probably shrink at a more rapid rate than most observers had suspected. One only needs to look at the United States where the schools and colleges have already been hard hit by a long depressed bond market, by the prospect of the end of federal revenue sharing, by reductions in government funded research and growing fiscal difficulties of many state governments, not to mention the declining number of college and university age people in the general population.[24] It is predicted that higher education in the United States will lose $6.5 billion for fiscal years 1981 through 1984.[25] England is another example, which in 1975 reached an inflationary rate of 27 percent.[26] As part of Britain's efforts to stay within its means, colleges and universities came under the ax of the government's cutbacks. It is unlikely that the British academic establishment will soon see better days. Similar observatins can be offered for France and The Netherlands.

Conclusion

In light of the current and future situation, college and university fund raisers must mount a campaign for greater private support. We can hope that promoting the needs of higher education will make the business sector aware of the existing financial problems of higher education and warrant their involvement. Corporations in the United States give more and larger gifts to colleges and universities than to any other kind of organization.[27] That effort level must be expanded in the United States and it must be envisioned and promoted in Europe. Universities train the talent that many corporations hope to recruit, and they house a segment of the public whose general approval is important for the functioning of business. In addition to a future source of intellectual manpower, corporations reap immediate benefits through the tax breaks provided by the state. Finally, contributions to education are typically noncontroversial, and most often mentioned since corporate citizens were once students of recipient schools.[28]

Suggestions to Increase Private Support

Softening the requirements for creating foundations, while establishing simpler procedures and more lenient laws to grant them juridicial status would undoubtedly attract more private donors. In addition, less government regulation in the affairs of the foundation would allow the donors to practice their will more readily in the distribution and investment of funds. Public reporting, official and voluntary, generated from the foundations may further ease the public's mistrust of abuse of funds.

Fund-raisers may also find it beneficial to specify their needs when approaching potential donors. The wise giver will not contribute to the cause or institution whose product is doubtful; he will regulate the amount he gives by the free money he has available, related to the urgency of the causes which come to his attention. The man who gives to philanthropic purposes, is likely to inform himself on the social problems of the day and to reach an independent judgement on the value of the social work which he is asked to support. "The philanthropist of today must look ahead with an informed mind and a warm imagination, and with new tools help build the world that is to be."[29] The burden of the campus administrator in this scenario is to provide the philanthropist with the necessary motivation to perpetuate higher education.

FOOTNOTES

1. *Colleges and Money*, *Faculty Guide to Academic Economics*, from the editors of *Change*, Change Magazine, U.S., 1976, p. 50.

2. *International Encyclopedia of Higher Education*, Vol. IV, Jossey-Bass Inc., 1977, p. 1716.

3. Jenkins, Edward C., *Philanthropy in America*, Association Press, New York, 1950, p. 5.

4. Ibid, p. 6.

5. Andrews, F. Emerson, *Philanthropic Giving*, Russell Sage Foundation, New York, 1950, p. 31.

6. Kiger, Joseph C., *Operating Principles of Larger Foundations*, Russell Sage Foundation, New York, 1954, p. 46.

7. Ibid, p. 50.

8. Andersen, Charles J., *1981-82 Fact Book*, *Demographic and Economic Data*, *America on Education*, Washington, D.C., 1982, p. 43.

9. *National Data Book*, Foundation Center, New York, 6th Edition, 1982.

10. *Giving USA*, The American Association of Fund Raising Council, Inc., New York, 1975, p. 28.

11. Ibid, p. 6.

12. Internal Revenue Code, Section 170, Chapter 7.

13. Ibid.

14. *U.S.A. Today*, October 1980, p. 6.

15. "Corporate Giving and the Public University", *Science*, September 1982, p. 219.

16. Ibid.

17. "Finance", *Business Week*, September 1982, p. 93.

18. International Encyclopedia, p. 1718.

19. Ibid, p. 1717.

20. Guide to European Foundations, by the Giovanni Agnelli Foundation, Columbia University Press, New York, 1973, p. 99.

21. Ibid.

22. Ibid.

23. Ibid, p. 100.

24. "The End of Affluence", Change, April 1980, pp. 10-11.

25. "Corporate Giving", p. 7.

26. "The End of Affluence", p. 10.

27. "Chiefs Favor Giving to Higher Education", Chronicle of Higher Education, May 26, 1982, p. 7.

28. Ibid.

29. Andrews, p. 259.

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THE URBAN, STATE-SUPPORTED UNIVERSITY IN THE UNITED STATES AND THE NETHERLANDS: A COMPARATIVE ANALYSIS

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1. Introduction and Perspectives

The relationship of the university to the larger society is a critical one in the contemporary world. Global economic difficulties have caused seemingly contradictory forces to act on universities in recent years. On one hand, lower tax revenues due to a decline in economic activity have curtailed spending on higher education, with only small budget increases or even reductions being commonplace.

On the other hand, governments and private industry have sought university help in order to move beyond those same economic problems. The resulting expectations to "do more with less" have placed the universities in a position previously unknown to them, at least in the lifetimes of current personnel.

The contradictory forces of budget reductions and higher expectations also serve to point out how much the universities are a part of their local, national, and global environments. Fewer economic resources and the resulting institutional consequences are bitter reminders of the economic dependence of universities on their respective societies. At the same time the requests for aid in problem-solving also serve as reminders of the dependence of the societies on the universities. In short, the walls surrounding academia are indeed permeable: all universities are already, to one extent or another, open systems interdependent with their environments.

The following is a comparison of one fairly recent and unique type of university in the United States, the state-supported, urban university, and its more traditional Dutch counterpart. A treatment of the parallel histories of the two different national systems is presented to aid in understanding how the universities have evolved into the kind of organizations which they are today. A description of the unique features of the state-supported, urban university in the United States is presented as one type of institution whose very purpose is to be an open system, in the many senses to which the word "open" can be applied. The contemporary Dutch university as an "opening" system is described as well. Finally, some of the difficulties of being an open system are outlined in both the American and Dutch contexts.

2. What is "Openness"?

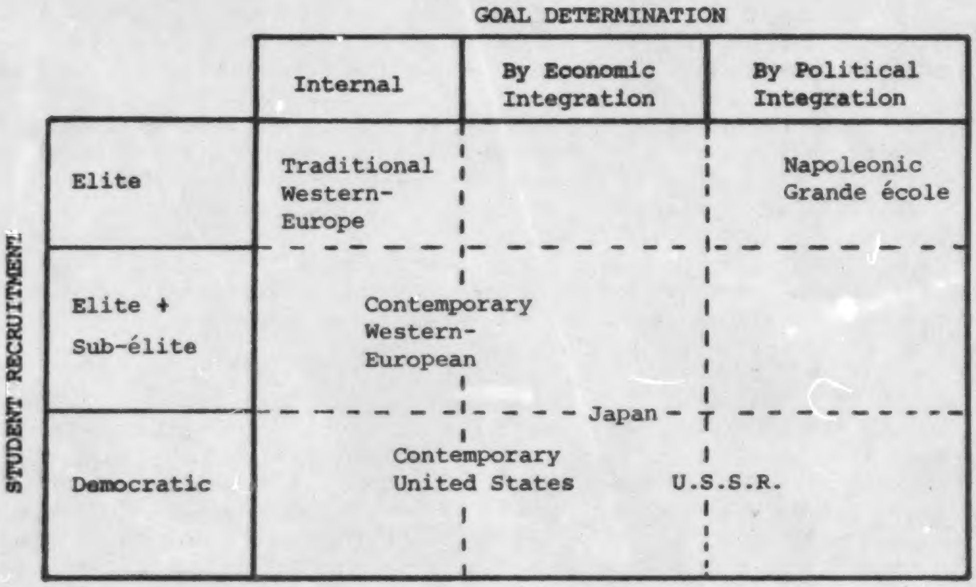
The concept of "openness" needs some clarification first. In chemical thermodynamics open systems are defined as systems in which, as well as exchange of energy, exchange of matter also occurs with the environment. The chemical potential of such a system is the rate in which the internal energy of the system (and thus the whole system) is affected by exchange of matter. The larger that rate, the more open such a system is. In other words, the openness of the system is related to its responsiveness.

In higher education it appears not to be that simple. One observation is that it has become a highly politicized term using as criteria questions like:

a) Do students come from an elite group, from sub-elites or from all social segments in society?

b) How is the actual goal-determining process oriented?
  - internally through in-group and peer review processes;
  - towards political (systems) integration of teaching, research and culture;
  - towards economic integration, either through national planning or through privatization.

Using these two main dimensions one obtains the following scheme with rough indications of some national systems of higher education:



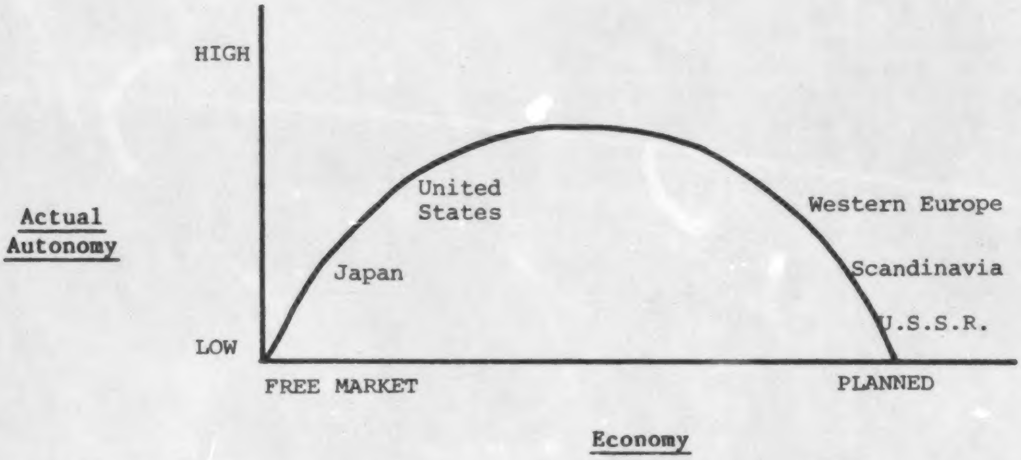
	GOAL DETERMINATION		
STUDENT RECRUITMENT	Internal	By Economic Integration	By Political Integration
Elite	Traditional Western-Europe		Napoleonic Grande école
Elite + Sub-élite	Contemporary Western-European		
		Japan	
Democratic	Contemporary United States		U.S.S.R.

Many of these systems might thus be viewed as "open" depending on the political view of the observant.

A second observation is that the terms "closed" and "autonomous" are neither synonymous nor antagonistic. An assessment of actual autonomy (as distinguished from formal autonomy) should be differentiated at least in terms of inputs, processes and outputs (Archer, 1972). Thus, low actual autonomy may occur in two strongly different situations:

- intense economic planning geared to manpower need determination,
- highly priced higher education linked to the economy through a free market for professional skills.

Whenever the demand for higher education is more social than economic in character, this seems to foster autonomy. The following graph illustrates this; in different environments similar degrees of autonomy may occur.



In the following discussion, the word "open" will be used mainly in the (thermodynamic) sense of "responsive", e.g. not as a static descriptive term, but as an indicator of the dynamic character of the institution within a changing environment.

The discussion on universities as open systems as presented here should be useful to those outside the two systems described, as well as those within the two nations, in that universities share difficulties which cross national boundaries. While all nations and individual universities are indeed unique, they also have some problems in common which may be amenable to common or similar solutions.

3. **Historical Contexts**

Both the Dutch and the American universities are rooted in the university tradition of Western Europe where the five universities of Salerno, Bologna, Montpellier, Paris and Oxford were functioning by the end of the 12th century (Rashdall, 1895).

The American universities grew out of the British model, while the Dutch followed the continental line of development. On the continent, and in Britain as well, the faculty maintained control over the important policy decisions of the universities. Following the European guild traditions, European universities evolved over the centuries into fairly autonomous institutions, especially in matters of curriculum content and faculty appointments, even after 1850 when these same institutions were funded more and more by central governments. Even so, fierce battles, especially with churches, had to be fought from time to time to maintain that autonomy. The political and religious changes which occurred in Europe as a whole and especially in the Netherlands impinged upon that autonomy, but never managed to radically change the structure, basically developed between 1500 and 1750.

3.1 The Netherlands

Since the end of the Napoleonic occupation in 1815, Dutch universities have been financed almost completely by the central government. At the same time, with bureaucrats having sniffed in the previous years at the doubtful virtues of centralist ruling, control over the appointment of professors was, at least in a legal sense, taken away from boards consisting of local city and county representatives of high culture, and assumed by the King, of course advised by his department. Discussions on the issue of separation of church and university, especially with regard to the education and initiation of (Dutch Reformed) church ministers, went on until 1876 when the Higher Education Act was passed in Parliament. This law established the faculties of theology within institutions of Higher Education, but granted the authority to give Church degrees to specialized institutions which were to be funded to a large extent by the government.

In the following decade the principle was adopted that private nonprofit organizations linked to churches could establish universities of their own, which were to be funded largely by the government on an equal basis as compared to the public universities, as long as the curriculum would meet certain nationally established standards laid down in an Academic Statute. Thus the unity of the academic system was maintained. This led to the establishment of one Dutch Reformed and two Catholic institutions and the Municipal University of Amsterdam among the 13 institutions of higher eduction now present in The Netherlands. Analogous observations can be made for the large number of higher vocational training schools and of the systems of primary and secondary education.

In the same Higher Education Act of 1876 faculty autonomy over all academic matters was put in the hands of the Academic Senate, while the strictly financial-economic administration was to be headed by a government-appointed body of part-time Commissioners. Among these usually the mayor of the city of Utrecht and the King's governor of the province of Utrecht were present.

During the last decades, in accord with strong changes in Dutch society, the specific and in a few cases denominational character of the institutions has faded to a great extent, while a permanent discussion about autonomy has been waged between the institutions of higher education on one hand (although each one acts in his own interest as much as possible) and the national government on the other hand.

To some extent, the contemporary Dutch university, for which the University of Utrecht, established in 1636, is an example, can still be conceived of as a direct descendant of the academic guild, being responsible for setting academic values and competence levels for students and apprentices (such as research assistants) without much regard for the demands of the outside world. The control over curriculum content, resarch programs, faculty appointments and other important matters is in fact still in the hands of senior faculty in most academic departments, despite the organizational changes mandated by the University Administration (Reform) Act of 1970 (WUB). The democratic reforms carried through in The Netherlands, as in other European countries at the end of the sixties (with the notable exception of Great Britain (Shils, 1982), although complicating decision-making and necessitating elaborate procedures and extensive central university offices, did not really end faculty dominance in policy matters within academic departments. At the same time, in a tightening job market, students sided with faculty in maintaining high quality, lengthy, in-depth curricula. The trend in recent years has been again to strengthen faculty dominance in curricular matters on the department level, while ensuring centralized administrative and coordinating functions within tightening budgets (Daalder, 1982). The result today may still be described as "closed", i.e. as an elitist and inward-looking, organizational system, although in the past years strong forces have emerged which are requiring more openness (Dijkman and Savenije, 1983). In this regard one should keep in mind that in The Netherlands, as in many other European nations, a bifurcation between the "true" universities on one hand and vocational training in separate institutions on the other hand has occurred, partly connected to a contempt within the universities for the utilitarian values of a technical, professional education. The current economic tide is one of the main forces for the present reassessment of this bifurcation.

3.2 **The United States**

The American university system has developed as an offshoot of the British one, but with a very important legal and structural difference. Where in Great Britain legal and actual authority was vested in the faculty, from the founding of Harvard in 1636 (the same year in which the University of Utrecht was chartered), institutions of higher education in the United States on the contrary have been governed and owned, at least in a legal sense, by lay boards comprised almost exclusively of non-faculty from the community, the state and the alumni. While day-to-day management is usually left to presidents and other administrative officers, it is the lay board which makes all personnel appointments and important policy decisions. Many universities do have traditions of faculty involvement to a varying degree in such matters, but in the end the boards are legally responsible for university management. This tradition, which grew originally from the Puritan practice of lay church boards, continues today in virtually all American institutions of higher education, regardless of their source of financial support. (For more on the history of American universities see Rudolph, 1982; Hofstadter and Smith, 1961; Hofstadter, 1955; Metzger, 1955.) Another important distinction between the U.S. and European systems is the way in which the legal and traditional separation of church and state has affected the system of higher education. This separation helped to bring about a pluralistic system of higher education in the U.S., reflecting the cultural and religious pluralism of the new nation. From the very beginning, colleges and universities, whether primarily publicly or privately funded, were in competition with each other for students and funds.

Because of those two factors, lay board governing and competition for students and funds, American universities from the beginning were more externally oriented than those in Europe.

With the passage of the Morrill Land Grant Act of 1862, the colleges and universities became viewed as instruments of economic growth and social change as well as centers for traditional learning and high culture. Teaching, applied research and public service in the "agricultural and mechanical arts" were the "raison d'être" of a large group of universities funded with public monies. (And "public service" was not just a catchy public relations term: it meant going out into the fields and giving scientifically based advice to farmers when they needed it. Today extension activities continue in both urban and rural areas.) The pressures for academic change from the classical European type curriculum therefore were mostly external, but external forces were in fact controlling academia, so colleges and universities adjusted to the new forces. At the same time new "land grant" colleges were created as well. The naming of "A&M" universities still bears witness to this.

In the spirit of a pluralistic society the resulting higher education system retained elements of both the classical and applied curricula, sometimes at different institutions, sometimes within the same institutions, while more and more institutions started to provide non-degree courses.

One may find separate community colleges, teacher colleges, separate graduate schools, separate undergraduate departments. And if all these functions are present within big state institutions, they are not integrated.

Today, more and more, in response to pertinent social issues, universities are providing skills and service in such fields as:

- educating minorities through special programs;
- inner city planning and (re)development;
- racial tensions;
- the design of adequate social welfare programs.

Institutions specifically set up in an urban environment like CSU (1964) are a fairly recent development.

Consequently the contemporary American higher education system has become very diverse in nature, unlike its Dutch counterpart. Besides a more outward looking orientation within the universities it is this very high diversity which is also responsible for the flexibility of the system as a whole.

In the meantime the distinction between colleges and universities has become so blurred as to be meaningless; in fact major research efforts have been mounted to categorize institutions in order to distinguish between them. One result of the internally and externally motivated competition has been the expensive and often duplicate search for academic respectability based more on personal, local and regional pride than on sound academic judgment (for a good, though now dated treatment on this subject, see Jencks and Riesman, 1968). For many of the Dutch spectators who have been watching the Dutch university scene over the past year with heated debates on the pro's and con's of maintaining, for example, the school of Pharmacy at one or another of the Dutch universities, this observation on American universities strikes a resonant chord.

With some generalization it might be thus concluded that the Dutch system is closed because it consists of similar and rather unresponsive institutions. Of course, there are unresponsive American institutions too, but the system as a whole is responsive and open in many aspects. Below, more specific observations are made on two urban-based, governmentally-funded institutions, the University of Utrecht on one hand, and Cleveland State University on the other hand. Some relevant data on these two universities have been compiled in Table 1.

4. Education

The University of Utrecht is still mainly a "one-track" university. Most of its students enter the university at the age of 18-19 and leave on an average six years later. The ratio of total enrollment to freshmen shows this (Table 1). At Cleveland State University, although the curriculum towards the Bachelors Degree requires the equivalent of four years of study, the ratio of total enrollment to freshmen is much greater. The reason for this phenomenon is not that students spend so much more time ineffectively at CSU, but that only a small proportion of the students enter as freshmen and leave the University four years later with a degree. The average age of the students (27 years) is also proof of this. In fact, the modular instructional course structure being offered at CSU makes a large number of options possible in terms of programs being offered. Students may drop in and out several times on their way towards a degree, doing part-time work, or mixing job experience and training with formal education in a cooperative program that has been developed in close contact with local and national business, government agencies and other organizations. To provide educational opportunities otherwise unavailable to the local communities (an aspect explicitly mentioned in the CSU mission statement) many courses are offered in late afternoon or in the evening, to such a great extent that at present some 40% of student credit hours are taught between the hours of 4:00 and 10:00 p.m..

The interesting observation can be made that whilst in The Netherlands there has been a strong drive on behalf of the government to compress the total enrollment time towards the formal curriculum course time, at CSU the drive has been away from the traditional four-year-in-a-row programs to longer and more flexible programming with the student himself being responsible for tracing a path. Dutch universities are beginning to discover that many more people outside their traditional market want higher education, and that it is in the institutioanl interest to provide for that education at low cost. After an advertisement in a local newspaper in Deventer, some 50 miles from Utrecht, offering a satellite law program from the University of Utrecht, an unexpected 750 people showed interest in such a part-time program. In six other departments part-time curricula will start this fall within RUU.

Thus, although there are signs of responsive change wihin RUU, the main effort in education is still directed to the traditional type of student. This is perhaps most clearly reflected in the use in The Netherlands of the concept of numerical yield or graduation rate, defined as the percentage of a cohort of entering freshmen which receive their degree after enough elapsed time. This graduation rate is believed to be a measure of the university's effectiveness. However, this graduation rate can only be evaluated some ten years after the specific freshmen cohort has entered. At the moment, the Central Bureau of

TABLE 1

Data on the University of Utrecht (RUU) and on Cleveland State University (CSU)

	CSU	RUU
Enrollment		
- Total	19,844 *	21,845 **
- Freshmen	2,022 *	4,219 **
- Total/Freshmen	9.4	5.2
- Male/Female Pct.	56/44	58/42
Teaching Intensity		
- Student/Staff Ratio	21.7	19.6 ***
Financial		
- Total unrestricted operating budget	63.9 M$	206.8 M$
- Institutional Support	5.3 M$ (8%)	15.3 M$ (7%)
- Income Distribution		
- state subsidy	51 %	90 %
- tuition/fees	37 %	5 %
- services/sales/misc.	12 %	5 %

* Fall 1982

** Three-year average 1980-1982

*** Excluding stafftime specifically allocated for research

Statistics results of the cohort entering in 1970 have just become available! It is well known that curriculum content, teaching assignments and instructional methods change faster than that. But in budgeting models developed for the universities in the eighties, estimates of enrollments are still based on expected intake of cohorts of freshmen and expected graduation rate, concepts of very doubtful usefulness in a more open and diverse university. It will become necessary to monitor effectiveness over a much shorter time period. A system in which teaching loads and budgeting are based on last year's awarded credits has recently been announced in RUU plans.

Often one sees that this graduation yield, at best an internal measure of process effectiveness, also is viewed as an indicator of teacher and program quality. Three factors contribute to this:

- the monolithic structure of programs as described in concurrence with the uniform and high academic standards resulting in the equivalence of all graduation certificates of the universities;
- a more or less fixed aptitude distribution of the student population, resulting from pre-selection of students at the age of 11 to 14 to the extent that only 20% of an age group is eligible to enter universities;
- a strong emphasis on research results as the dominant criterion for faculty performance which has led to a neglect of systematic performance evaluation in teaching.

Inevitably, with increasing program diversity a discussion will emerge on educational quality which will also have to deal with product quality as separate from process effectiveness.

In the pluralistic U.S. system, and especially in public institutions, often all students with a secondary degree may enroll. To rate high school senior quality on a nationally comparative basis, institutions will require students to take SAT's (Scholastic Aptitude Tests). The score distribution for the entering freshmen at CSU shows an average of 424 points (out of 700) on the verbal test, and an average of 474 on the mathematical test, which places the University near the average for state-supported universities in the U.S.. Students with very low scores are referred to remedial teaching classes in a Special Education Program. These students do lack very basic academic courses when they come out of high school, but CSU as a public state-supported university cannot refuse to enroll them.

It is not surprising that in the past few months a nationwide heated debate on the quality of education in U.S. high schools and universities has arisen, starting with the Report of the National Committee on Excellence in Education, and the process has become a hot political issue.

At the same time it is clear that, with the broad range of students entering higher education institutions in the U.S., and considering that each university has over time carved out a niche in the student market, academic standards do vary greatly, and thus internal process indicators like a graduation rate have even less relevance to quality. Quality then emerges as the result of accreditation by external boards, or by professional organizations.

For example, CSU offers a chemistry degree that is certified by the American Chemical Society. However, inspection of that curriculum shows that a great many courses are mandatory and follow a strongly fixed schedule due to the internal structure of the subject itself.

Clearly, CSU and RUU serve a different clientele of students in intellectual aptitude and homogeneity. As regards the required student/staff ratio one might argue (as professional educators do in both universities) that offering high quality degrees requires low student/staff ratios. On the other hand, homogeneity of groups and a high aptitude level of students would indicate that much lower ratios would suffice (as administrators and politicians argue in both systems). Surprisingly enough, a comparison of the actual student/staff ratios shows (Table 1) that CSU and RUU do not differ that much in spite of the great differences of curriculum structure and student body composition.

One explanation for the similarity of the staff/student ratio may be the following. As more and more students from a specific group enter higher education, within that group entrance into higher education gradually shifts from a privilege towards a right. When the great majority of that group pursues higher education again a shift occurs from a right to an obligation. In states like California where over 80% of high school graduates enter higher education that education in fact becomes compulsory, and even more so when strong competition for few jobs arises (Trow, 1972).

Although in The Netherlands only 15-20% of an age group enters university, they comprise over 80% of the group of graduates of the advanced high school for which they have been selected five years earlier. Within that group, a university education has become almost compulsory.

Not surprisingly, both in the U.S. and in The Netherlands, many of the students appear not to be intrinsically motivated by the subjects they are studying. And a hypothesis worthwhile investigating further might be that the drive towards group work and towards higher student/staff ratios in higher education may be caused more by the increased motivational inhomogeneity than by an increased intellectual inhomogeneity, or by the qualitative values of small groups as such. Anyway, it appears that maintaining a balance between high academic standards on one hand, and openness to a large clientele on the other hand under tight financial conditions is like walking a tightrope being under simultaneous fire from all sides. If the university is to be held accountable for spending the taxpayers' money, it has to be responsive to the educational needs of a large proportion of these taxpayers. In order to survive, it has to be effective, and it has to maintain academic standards in order to maintain credibility.

Thus in both universities, different as they are, the same concerns for quality and effectiveness play an ever increasing role. CSU clearly tries to deny that it only has a choice one way or the other, and tries to offer degrees of established and maintained quality to be reached in a varying timespan, besides a large number of non-credit courses. The notion that the demands of mass education and of high quality are contradictory and cannot both be met in the same institution is only valid if viewed in the context of the traditional European curriculum. The problems which organizations like the RUU have in opening up are evidence of the strength of that tradition.

5. **Research**

A large proportion of RUU funds (on the order of 30-40% of the block part by the Dutch government) is being used for high quality research, mostly basic research which is not contracted with national organizations or government departments, although national organizations do try more and more in conjunction with government departments to coordinate the research effort at the ten universities and three polytechnics in The Netherlands. The universities are held responsible for effective spending of these funds and are to report annually on the output of the conducted research. At the central office, therefore, data are routinely available on the productivity of researchers in terms of accepted publications in (inter)national research journals using peer review for paper selection. In 1981, for example, 2,974 papers by RUU researchers were published in scientific research periodicals. At the same time, data like these are used as quality indicators in reviewing research programs. No such data are centrally available at CSU. Total amount of grants currently runs around $8M, or only about 8% of the unrestricted budget. It should be noted, however, that grant information is most important at the department level where tenure and promotion decisions are primarily made. Although research is emphasized at CSU, the educational "enterprise" is dominant. This contrasts strongly with the (basic) research culture of the RUU. Basic research by its nature has to be concerned with scholarly excellence. It is the dominance of this culture, with its internal pecking-order being established on the basis of achievement in fundamental research, which acts as a counterforce against initiatives to become an open system.

6. **The Growth of Bureaucracy**

Both in the U.S. and in The Netherlands, governments have increasingly involved themselves in regulating and influencing higher education systems, especially after World War II. Starting out of an ideology of promoting a more massive entrance to the systems of higher education, not in the least because they were an emerging important productivity factor in the national economies, the attitude has gradually shifted to an ideology of considering higher education as one more service to the public in the emerging welfare state. Lawmakers have increasingly given regulatory powers to bureaucrats who have to mediate in a consistent manner between the public interest on one hand and the professional interests on the other. And although "deregulation" may have become a political issue with some force, not only in the U.S. but also in The Netherlands, it seems unlikely that, in view of the large amounts of public money spent on higher education, the state-supported universities will profit greatly from this tide. Partly as a counterpart to the growth of state-wide bodies demanding reports, plans and data, central university offices had to grow too, another illustration of Parkinson's principles.

In The Netherlands, moreover, the democratic reforms of the sixties required larger staffs, while in the U.S. the needs for compliance with federal regulations on affirmative action and to prevent litigation had its effects on staff, and on record-keeping (Shils, 1982).

In spite of all differences between both countries, there is again a striking similarity between CSU and RUU in this regard. The 1983 budget of the RUU awarded to the "Bureau of the University", performing activities similar to

"Institutional Support" in the United States was 7% of the operating budget, while the FY '83 operating budget of CSU listed comparable activities within the category of Institutional Support as receiving 8% of the total unrestricted expense budget.

6. Concluding Remarks

In both higher education systems there is a heightened tension between the traditional functions, briefly indicated by transmission of culture, shaping of individuals, creating new knowledge and selection of (industrial) leadership on one hand, and the increasing popular functions of providing useful knowledge and service to industry, agriculture, health, military and modern urban society with its special problems on the other hand.

Some of these functions require a free and very autonomous environment in order to flourish, others require close coordination with national priorities; some are compatible with long range planning while some need to be able to adapt to changes very easily and flexibly. This leads to a conclusion that the organizational structure for every function or program should be designed with close regard to its character as indicated above. The same functional differentiation should be applied when considering

- budgeting models for each function/program;
- government interference in goal-determination;
- the way in which quality may be assessed.

For some programs the traditional academic disciplines may be a good choice as organizational units, for other programs the sector of society being served (agriculture, industry, services and government) may be a much more appropriate unit. Recently RUU announced in a long range policy paper that reorganization of teaching and research into separate organizational structures is being considered as a first step. CSU, like other American universities, has effected such a successful organizational diversity since its founding.

As a second concluding remark, it is useful to note that RUU in many respects is quite similar to the older, more traditional universities in the U.S.. One major difference is that in the U.S. these were usually founded in rural areas (partly to keep students away from the sin of the cities, only to find sometimes cities grow out of and around them later on). One result of this is that in the U.S. new institutions or satellites of older institutions had to be founded to meet the needs of older students, living in urban areas, whose needs had to be satisfied at the same time.

On the other hand, in Europe, the universities always were located inside big cities. Their location would seem to make them especially fit to "open up" without building new campuses. The opening process, however, is much more difficult to accomplish at new institutions than at older ones, even with their histories of elitism. Precisely the newly (1975) established University of Maastricht in The Netherlands, away from the most densily populated areas, has succesfully been able to set up a matrix-type organization for the teaching and research effort in its medical school, and is planning to do the same in its newly established law program.

Combining both conclusions with the financial impossibility of establishing new institutions at present in Europe, and bearing in mind that "openness" and "autonomous" are not contradictory, this would indicate that governments should constrain themselves in their zeal for regulating every aspect of higher education, and only regulate those activities where close coordination is required and universities are unable to provide for this coordination. On the other hand, incentives should be given to allow the institutions to operate flexibly within and in tune with their environment while being held accountable for their performance with public monies.

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ABSTRACTS OF ADDITIONAL CONTRIBUTED PAPERS

CANCELLATION OF PROGRAMS: THE DUTCH EXPERIENCE

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The problems faced by the Dutch universities are outlined: they have more students, but less money; research budgets are dependent on the number of students; there are no vacancies or money for recruiting young scientists; the decision structure is based on growth, not decline; five-year plans have to be adjusted every year; and after several years of budget cuts, proportional budget cuts are no longer desirable. A policy paper was presented by the Minister of Education in September 1982 calling for an 8% budget cut until 1987; the universities had until March 1983 to devise an implementation plan, otherwise the Minister would impose one. The complex decision structures involved are outlined (e.g., unions, government bodies, university bodies, etc.). The final proposals of the ad hoc university committee and the Minister of Education were about the same. The main outcomes were: three out of five Schools of Dentistry merged; three out of five geology departments closed; the merger of three and closing of one (out of four) Schoools of Pharmacy; the Philosophy program was restructured; eight terminations and merger of two academic programs in social sciences (out of 35); 28 terminations out of 120 academic programs in language departments; and the closing of many research units in science and technology departments. However, no medical school or teaching hospital was closed, funds were given to strengthen computer science, and the possibility of restructuring language and social science departments is being investigated. The process and outcomes of the procedure are evaluated, largely favourably, although the lack of research about the quality of teaching and research, the real costs of programs, the needs of the labour market, the future role of universities, and the lack of university profiles is faulted.

MANAGING THE DEFICIT: A CASE OF FIVE YEARS OF SEVERE AUSTERITY

Charles H. Bélanger, Director of Institutional Research
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In 1980-81, the University of Montréal began what was to become a five-year period of financial cutbacks to reduce an anticipated deficit of 45M$. The paper gives a yearly account of how the institution managed and is managing to reduce its operation in terms of personnel, programs, and budget. Of particular interest is the approach taken to review curricular offerings, to measure academic productivity and to increase revenue through additional student clientele.

FEEDBACK RELATIONS BETWEEN LABOUR MARKET AND UNIVERSITY EDUCATION: A CASE STUDY ON BIOLOGY, PHYSICS, AND COMPUTER SCIENCE

Poul Bonde, Secretary of Studies
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The situation at the University of Aarhus for students in computer science in the early seventies, teachers in experimental physics in the late seventies, and the labour market for biologists in the beginning of the eighties are analysed as examples of feedback relations. A framework of general concepts is introduced, a formal system including labour market, the university, the Ministry of Education, and a set of dynamic key factors which operate inside the formal system.

The examples are placed in the 'Pyramid of Decision', illustrating that economic and political factors play a much greater role today than earlier. A movement from decentralisation to crisis-motivated centralisation is noted.

Feedback relations are concluded to be one of the keys to an open university.

DESIGN CHARACTERISTICS OF THE SIMULATION-GAME 'PERFORM'

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The university is described as a mixed organisation: it operates as a "professional bureaucracy", as it contains departments of bureaucratic and professional organisation; it operates as a service and common weal organisation; and it uses both authority of the office and functional authority as organising principles. Legal and political inhibitors to flexibility are discussed. The specifications of the simulation-game PERFORM are outlined. PERFORM is an interactive simulation commissioned by the government and Dutch universities. Its intended audience is administrators and planners of universities and public officials of government. Its purpose is to help provide good tools for policy design and manpower planning and it is structured with two faculties (one with a research emphasis, one with a teaching emphasis) and a board, council, and planning staff. It uses an adapted version of the FORMASY program discussed elsewhere in this volume. PERFORM is a free-standing simulation, lasting approximately three hours, and could also be used for management training. Steps of play are outlined. PERFORM is being pilot-tested in 1983 and will be operational in 1984. The client must maintain PERFORM and FORMASY with up-to-date information. It is hoped that the use of PERFORM will lead to policy dialogues; i.e., discussion about policy problems, causes, impacts, and options concerning interrelationships between manpower, teaching, and research.

FOUNDATION SUPPORT FOR INNOVATION IN HIGHER EDUCATION

Steven Lavine, Assistant Director for Humanities
Rockefeller Foundation

In providing support to initiate programs in higher education, large American foundations traditionally depend on their own independent assessment of the needs of a field of study. Certainly this was true in the Carnegie-Ford and Rockefeller foundation grants in the late 1950's and early 1960's to develop the network of regional study centres within the larger field of international studies. More recently this pattern has been repeated in foundation support for such emerging fields as Women's Studies and Afro-American studies. It is precisely this ability to act flexibly, relatively unhindered by larger institutioanl constraints, which has characterized American foundations at their best. This mode of operation makes it essential that universities seeking support familiarize themselves with the current and emerging priorities of the foundations they intend to approach.

ADULTS AND REGULAR STUDENTS: PARTNERS IN EDUCATION AT THE FACULTY OF LAW VRIJE UNIVERSITEIT BRUSSEL

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Even though there is free access to universities in Belgium for all those with the necessary requirements, there have been few adult students. Legal degrees were obtainable to anyone passing exams administered by the Central Examining Board, but no guidance was offered to non-"regular" students. In 1975 a special program was set up by the Faculty of Law at Vrije Universiteit Brussel, with enrolment limited to those working full-time. Lectures and practica are given in evenings and on Saturdays by the same staff as the regular courses. After a minimum of five years of study and passing all exams, students obtain the degree of Master in Law. Approximately 450 students have enrolled in the program, with a 30% successful matriculation rate (vs 50% for regular students); however, 47% of adult students who take the exams pass in the first year. For example, in 1976, of 56 students who entered, 7 (12%) graduated in 1981, 5 (11%) in 1982, and 44 (77%) dropped out. Approximately 75% of the students are men, with more than 50% of them married or in a regular relationship. Approximately 60% of the women are not married or in a regular relationship. More than 40% of all students have a certificate of secondary education, 25% have a university certificate, and 25% have a certificate of higher education not from a university. About 23% (vs 6.8% for regular students) are from working-class backgrounds, although more than 50% now work in government offices. More than 60% work in Brussels or environs. The worst problem for adults is drop-out - 20% drop out before January of their first year and 60% before the beginning of their first exam session, i.e. 80% do not complete the first year of studies. The most significant relationship seems to be between students' preliminary education and their salary: one in two of those with a high salary and an academic degree drop out; 9 in 10 of those with a low salary and only a secondary education certificate drop out. Suggestions regarding more guidance and flexibility for adult students are offered.

INSTITUTIONAL IMPLICATIONS OF INTERNATIONAL CO-OPERATION IN HIGHER EDUCATION: EXPERIENCES OF THE UNIVERSITY OF ESSEX IN A JOINT STUDY PROGRAMME WITH INSTITUTIONS IN PARIS AND KARLSRUHE

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This paper describes a Joint Electrical Engineering Degree Scheme involving the University of Essex, England, the École Supérieure d'Ingénieurs en Électrotechnique et Électronique (ESIEE), Paris, and the Universitat Fridericiana in Karlsruhe, Germany. The author identifies benefits and difficulties for students involved in international study in general, and discusses specifics involved in this study program. Questions of selection and admission, language proficiency, examination and assessment, certification, fees, funding, and administrative problems such as accreditation and student preparation are raised. The author also identifies factors contributing to the success of the program, including staff enthusiasm, support from the institutional heads, the students' official connection to the home institution, the gradual growth of the scheme, the technological specialisation of the study area (telecommunications) and related considerable homogeneity of courses, subject matter, and student attainment, the comprehensive planning undertaken by the institutions involved, and the special factors of the individual institutions - the autonomy of the University of Essex, the international outlook of ESIEE, and the flexibility of the curriculum at Karlsruhe.

UNIVERSITY, REGION, AND FRONTIER: THE CASE OF THE UNIVERSITY OF GENEVA AND THE FRENCH/GENEVA REGION

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Any university operates as a subsystem of the larger society, reflecting its needs, contradictions, aspirations, and identity. The university subsystem requires two interdependent features, autonomy and openness. This paper examines the University of Geneva, which although because of its position in a cross-frontier area with a strong international presence is not easily generalizable, may nonetheless be revealing. The University of Geneva has three kinds of assignments: 1) teaching and research; 2) developing and maintaining an open door policy and quality standards; and 3) responding to the aspirations of individuals and the needs of society. The University operates on the principles of autonomy and participation. Four aspects of organizational relations are considered. 1) Spatial relations: Due to its particular circumstance in a cross-frontier location, the University of Geneva encourages cross-frontier relations and fosters national and international inter-institutional cooperation. 2) Temporal relations: Efforts are being made to respond to the needs of three groups not traditionally met by universities: "Third Age", i.e., over 60's; "Maturité", i.e., those who don't have the necessary degrees for entrance; and the active working population. 3) Institutional relations: Efforts are being made to strengthen the links between the University and public and private institutions in the economic sector. 4) Socio-Cultural relations: The University is broadcasting mostly cultural and educational programs through its access to local FM radio.

ADULT EDUCATION IN DUTCH UNIVERSITIES

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This paper is concerned with adult education at the university level, as opposed to primary and secondary. The adult enrolment in Dutch university-level education has remained relatively stable from the 1950's to present-day, with approximately 25% of students in the 25-29 age bracket and 14% over 30. Approximately 8% of students have full-time jobs and 8% part-time jobs. Previously, there was no encouragement for adults to participate in university education; however, this is changing (cf, the new Open University). New special part-time programs are being set up; these will take 6-8 years vs 4 for full-time study. Thirty-nine part-time courses were proposed for September but only 16 were approved. Criteria used concerned the regional distribution of part-time courses and coherence with the development of the Open University. This is seen as unnecessary top-down decision-making for three reasons: 1) decisions should be made locally by the involved institutions; 2) the focus on regional distribution overlooks the importance of proximity of course and residence for part-time students; and 3) the Open University and part-time programs will not attract the same students nor offer the same courses. Post-academic education is also discussed as a new task legally imposed on the universities. Approximately 15 national organisations in charge of programming and administering courses will be established for each field of science or profession. In 1982-83 there were approximately 500 courses with 20,000 students and these figures are expected to increase rapidly. It is hoped that Dutch academics will benefit from experiences in other countries in adult education; for example, France and Germany.

TWENTE UNIVERSITY OF TECHNOLOGY AND INTERNATIONAL COOPERATION

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Twente University of Technology (TUT) is nearly 20 years old, has approximately 3,500 students, 1,500 scientific, technical, and administrative staff, and nine areas of study: Mechanical Engineering, Electrical Engineering, Chemical Engineering, Applied Physics, Applied Mathematics, Business Management, Public Administration, Computer Science/Informatics, and Educational Sciences and Technology. There has been little involvement up to now in international exchange programs, but this is expected to change. A summary of current activities follows. The Public Administration department has developed a program for students interested in an international career or who will concentrate on problems with an international dimension in a Dutch public administration career. Contacts are being established with the University of Florence and the American University in Washington for student exchanges. The Business Management department is investigating possible partnerships with universities in Belgium, Germany, France, and the United Kingdom, with questions about the best type of partnership for the department's aim of internationlisation. The new department of Educational Science and Technology entered into an agreement with the Program in Instructional Design, Development and Evaluation at Syracuse University, New York, in 1982. The universities will exchange syllabi, bulletins, faculty curriculum vitae, publications and resource information, and research project information, as well as provide ample opportunity for faculty exchange. Student exchanges are planned for the future. At the university level, partnership contracts have been signed with Dortmund University (for its Coordination Centre of Biomedical Technique) and Munster University (for its Medical Faculty) in Germany, and Loughborough University of Technology in England for its Applied Physics program.

NEEDS OF ADULTS FOR HIGHER EDUCATION: PROBLEMS OF RESEARCH FOR A NEW OPEN UNIVERSITY

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In 1980, a decision was taken to start a Dutch Open University in 1984. Although no research was done on needs, the success of the British Open University and institutions in Israel and West Germany and the Dutch "mother-MAVO" project are cited as institutions which had unpredicted success, and the lack of effect of research in Japan and the United States confirmed that social research has little prognostic value. A decision to start an "open university" depends more on political conviction, a forceful planning committee, and cooperation between the initiators and people in the department of education than on research projects.

The Dutch Open University will start in 1984 without a survey into needs but it does have a Bureau for Research and Evaluation which will attempt to learn more about the future students; for example, general information about participation in higher education, knowledge and awareness of the Open University, interest in the Open University, information about participation and interest in adult education, and target groups of the Open University. Several weaknesses of survey techniques in needs research are outlined: 1) they identify felt needs vs concrete opportunities; 2) needs and motives change during participation in an educational process; 3) people's stated intentions do not correlate highly with their actions; and 4) there is no real interaction between the institute and its students. Recommendations are made that research should be connected with outreach and counselling work, and that rather than from surveys, researchers should collect information from teachers and counsellors, interviews, and leaders of social organisations which contain the target population.

MANPOWER PLANNING FOR UNIVERSITIES IN THE NETHERLANDS

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The Ministry of Education and thirteen universities in The Netherlands commissioned a working group to develop a set of tools for manpower planning and policy design. Manpower planning and policy design take place on three levels: ministerial, university, and departmental, with decisions taken at a higher level putting constraints on the lower one(s). The commission was restricted to planning and policy design for categories of personnel rather than for individuals. Requirements for the tools were that no technical knowledge should be required by the user, credible and simple models should be used, no decision criteria would be built-in, effects of decision structure should be made visible, and the models and computer programs should be portable. Four basic categories of tools were determined: 1) basic models for manpower streams with forecasting or extrapolation options; 2) conversational planning and policy design with respect to categorical aspects of manpower (FORMASY); 3) interactive simulation games with actors on different decision levels (PERFORM); and 4) development of new variants and options in the context of the first three.